

10-20-19

Breidert Air-X-Hauster

THE GREATEST SCIENTIFIC IMPROVEMENT IN ROOF VENTILATORS IN MORE THAN 50 YEARS



PATENT NO. 2269428

**PARENT
AND
KIRKBRIDE**

**HEATING
VENTILATING
AIR CONDITIONING
EQUIPMENT**

**FOURTH ST. AT LOCUST
PHILADELPHIA, PA.**

Specifications

ENGINEERING DATA

No. 44-1

G. C. BREIDERT CO.

634 SO. SPRING ST., LOS ANGELES 14, CALIF.

COPYRIGHT 1944 • PRINTED IN U.S.A.

BREIDERT AIR-X-HAUSTER

AIA File No. 30D1

AIA File No. 30D1



George C. Breidert, inventor and manufacturer of the Breidert Air-X-Hauster

IN THE FEW YEARS that have elapsed since the Breidert Air-X-Hauster was first put on the market, its revolutionary design and remarkable success have led many ventilating experts and builders to ask "Who is Breidert?"

George C. Breidert is a successful ventilating engineer and inventor who has had more than 35 years of practical experience in the ventilating field. He invented the ventilators used extensively on railway cars before the advent of air conditioning. Many of his revolutionary ideas on ventilation are now accepted as standard by the entire industry. He has patented various types of ventilators, many of which are in use all over the world.

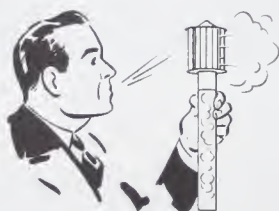
It was Mr. Breidert's greatest ambition to design a roof ventilator with greater all-around efficiency and more pleasing architectural lines than conventional ventilators possess. Utilizing proven principles of aerodynamics, Mr. Breidert perfected the radically different Breidert Air-X-Hauster, his most important invention. *It is the greatest scientific improvement in roof ventilators in more than fifty years.* Complete facts about the Breidert Air-X-Hauster and its various types are given on the following pages.

THE BREIDERT AIR-X-HAUSTER

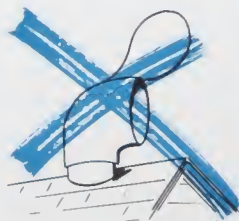
The Greatest Scientific Improvement in Ventilators in more than Fifty Years!

Principle of Operation. The design of the Breidert Air-X-Hauster is completely unlike that of any other ventilator now on the market. Most conventional ventilators work effectively only when the wind strikes on a horizontal plane. Wind currents coming from other angles, which is often the case, cause annoying down-drafts and stagnation of stale air in the ventilator. The design of the Breidert Air-X-Hauster, however, is based on modern science's knowledge of aerodynamics. This revolutionary ventilator utilizes outside air currents to achieve *positive ventilation under all conditions*.

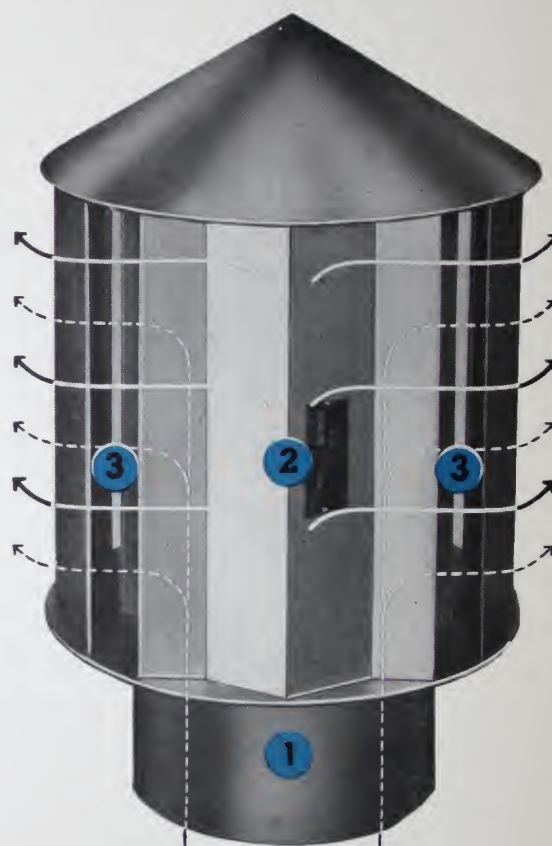
Uses One of Nature's Laws. Air always rushes in to fill a vacuum. Wind currents striking the Breidert Air-X-Hauster create a vacuum, which causes stale air to be sucked out as in the demonstration illustrated at right.



Stationary . . . No Moving Parts. The Breidert Air-X-Hauster remains absolutely stationary . . . requires no fans in ordinary cases. There are no moving parts to jam or get out of order, yet it attains standards of ventilating efficiency never approached by conventional ventilators.



No More Back-Drafts. Due to an ingenious inner baffle construction, it is impossible for the positive suction action of the Breidert Air-X-Hauster to be reversed. *Back-drafts are eliminated where no negative pressure prevails.* The Breidert Air-X-Hauster overcomes many back-draft difficulties where other ventilators fail.



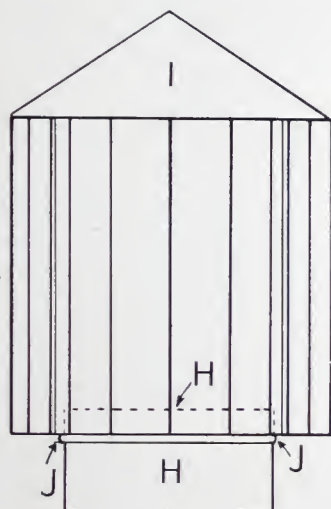
1. Ventilator neck, connected by collar to ventilating pipe.
2. Outside walls of ventilator. V-shaped faces deflect wind (solid white lines) past openings, 3, creating siphon which exhausts stale air (dotted lines).
3. Air outlet openings at four corners of the ventilator. Note in drawings on opposite page the ingenious baffle arrangement inside the openings, which prevents back-drafts.

THE BREIDERT AIR-X-HAUSTER

No Matter Which Way The Wind Blows . . .

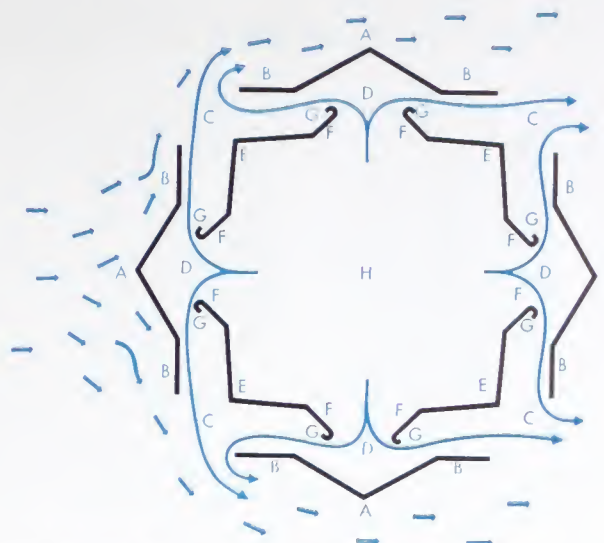
The aerodynamically correct principle of the Breidert Air-X-Hauster causes it to operate effectively, under either of the conditions shown at right.

In either case, air is siphoned out of the building or vehicle on which the ventilator is installed. The Breidert Air-X-Hauster is adaptable to all types of structures, including many on which roof ventilators were never before considered practical. See applications on following pages.

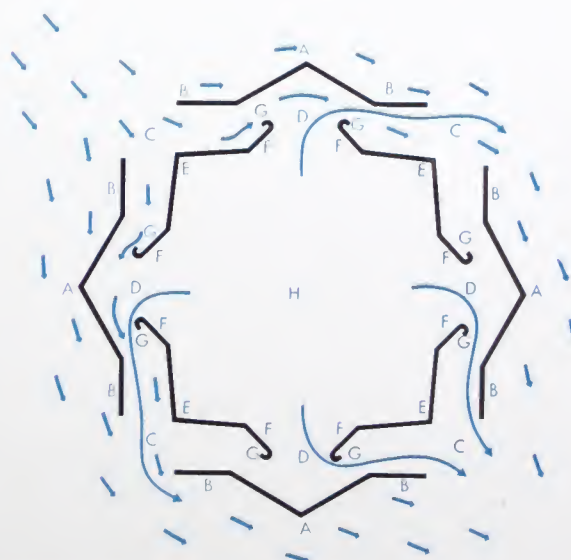


Key to Letters Shown in Diagrams

- (A)—V-shaped wind dividing face on four sides.
- (B)—Transverse flat wind-resisting face.
- (C)—Vertical openings on four corners where strong siphon is created, drawing air up through neck (H).
- (D)—Inside vertical openings through which air is siphoned from neck (H).
- (E)—Inside deflector walls.
- (F)—Inside deflectors and rain stops prevent rain from entering through openings (D).
- (G)—Rain arrestors.
- (H)—Round neck connected with inside of room or building through which air rises. Neck extends above floor or bottom of ventilator. Rain drains outside of neck at (J).
- (I)—Cone on top of ventilator deflects down currents of air over openings (C).



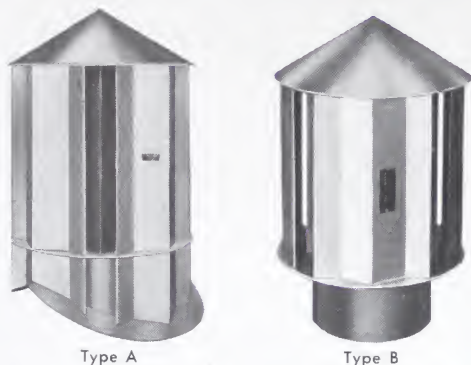
Condition No. 1: Wind strikes V-shaped face (A) of Breidert Air-X-Hauster and is deflected away and across outlet openings (C) at high velocity. A venturi action is caused which induces a secondary air motion through ventilator and out openings (C). The velocity of secondary air motion through the ventilator is in a much higher ratio to wind currents against outside surfaces than with conventional stationary types, regardless of wind direction.



Condition No. 2: Wind strikes directly at outlet opening (C). Some wind is deflected past openings, causing siphon through inner openings (D). Wind entering directly into outlet opening is deflected past inner openings by baffles (E) causing siphon action, and passes out through other outer openings (C).

THE BREIDERT AIR-X-HAUSTER

More Pleasing in Appearance



Type A

Type B

Determining size and number of ventilators needed for given rate of air change

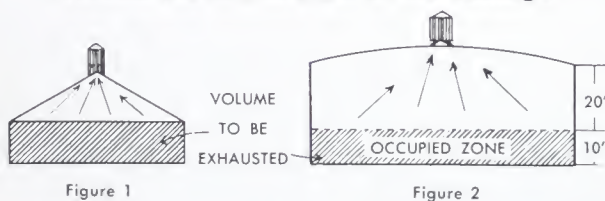


Figure 1

Figure 2

The standard of ventilation is based on the length of time required to exhaust the entire volume of air in a room or building. For example, assume a five minute air change is desired. Determine the cubic content of the space by multiplying the length by the width by the height: i.e., in a room 30 x 60 x 12 feet, the cubic content is 21,600 cubic feet. By dividing this content by 5, it is found that 4320 cubic feet of air per minute must be exhausted to change the air every five minutes. By referring to the ventilator capacity tables on pages 18, 19 and 20, the proper size and number of ventilators can be selected.

In rooms with high ceilings it is not necessary to figure on changing the entire volume of air, but only that to a height of ten feet above the floor, because this is the occupied zone and space above it need not be considered. Thus, in a room thirty feet high a fifteen minute change in the entire space is equal to a five minute change in the occupied zone as indicated in Figure 2 above. This calculation will be satisfactory only if the ventilator is mounted well above the ten foot zone and fresh air is admitted low in this zone.

The rate of air change required in various types of buildings according to accepted standards is given below.

Restaurant and Hotel Kitchens.....	2 Min.
Residence Kitchens	2-3 Min.
Offices, depending on density of occupancy.....	5-10 Min.
Factory Buildings	5-10 Min.
Night cooling by attic ventilation.....	2 Min. on floor below
Garages (Repair Shops)	4-6 Min.
Theatres, Lodges, Assembly Halls	3-4 Min.
Laundries	3-6 Min.
Farm Barns.....	30 CFM* per horse 60* CFM per cow
Stores	5 Min.

*Cubic feet per minute.

The Breidert Air-X-Hauster has been praised by many architects and builders for its compact and attractive appearance, with no unsightly mountings. The Type A is especially recommended for homes and buildings where the most pleasing appearance is desired. The base of the ventilator is hidden from view by the outer walls extending down to the roof. The wind resisting surface which is so important to the proper functioning of the ventilator is thus increased and appearance is also improved.

The Type B has the same construction as the Type A, except that the outer walls do not extend to the roof and the base is exposed to view. This base is not furnished as part of the Type B ventilator, but must be ordered separately.

Higher Efficiency

The Breidert Air-X-Hauster fulfills the long-felt need for a means of moving large quantities of air at small cost from spaces or rooms directly under the roof or where it is possible to run vertical ducts to lower floors of multi-storied buildings. Confidence in the merits of the old-fashioned round type of roof ventilator (more commonly known as a "globe ventilator," which has been imitated and redesigned for many years) has steadily diminished. Architects and engineers have long known that certain types of ventilators are unsatisfactory because of annoying "down-drafts" (back-draft or reversed action) which defeat the purpose of the ventilator. Proper ventilation depends entirely on the movement of adequate volumes of air in a predetermined manner. That is, if a 10 minute



Above is shown the appearance and characteristic action of the Breidert Air-X-Hauster (left) compared to conventional round and revolving type ventilators, each set on the ridge of a saw tooth roof. Up or down air currents, indicated by arrows, do not affect the positive siphon action of the Breidert Air-X-Hauster. The round and revolving type ventilators "back up" and cause down-drafts under the same wind conditions, as shown by heavy arrows.

THE BREIDERT AIR-X-HAUSTER

air change is desired, there should be no fluctuation due to a down-draft of air in the ventilator reversing the circulation and upsetting the air change.

The Breidert Air-X-Hauster is absolutely positive in action. When properly installed, you can use fewer and smaller Breidert Air-X-Hausters than conventional venti-

lators because of their higher efficiency. With no operating expense, they move amazingly large volumes of air. There are no fluctuations due to down-drafts or stagnation of air in the ventilator. Breidert Air-X-Hausters are also highly effective when used for night cooling by attic ventilation.

Installations on Industrial Buildings

Proper ventilation of industrial buildings is one of the most important and at the same time most neglected phases of the ventilating problem. An adequate supply of fresh air is necessary in all shops where there are a number of employees and especially where the manufacturing processes produce quantities of heat, dust or obnoxious fumes. The moving of such an amount of air often is costly by mechanical means and thus ventilation of such areas is frequently neglected. The use of Breidert Air-X-Hausters provides a means of moving a large volume of air with a low initial cost and no operating expense.

Figure 1 shows the application of Type A Breidert Air-X-Hausters on a saw tooth type roof. Note how the base is hidden from view. Figure 2 shows an application of a Type B Breidert Air-X-Hauster on a monitor type roof.

Ventilators should always be installed at the highest point of the roof. With the correct number for adequate ventilation thus installed it is essential to keep the saw tooth or monitor windows closed to keep the air from short circuiting. This has a further special advantage during inclement weather, when open windows would cause cold down-drafts and permit entrance of snow and rain. Closed saw tooth windows also keep out smoke and fumes from adjacent buildings.

Breidert Air-X-Hausters installed in the above manner will prevent condensation of moisture on the saw tooth windows, when it is cold outside and the inside air is warm and moist, by constantly exhausting this moisture to the outside instead of allowing it to collect on the cold windows.

A great variety of applications of Breidert Air-X-

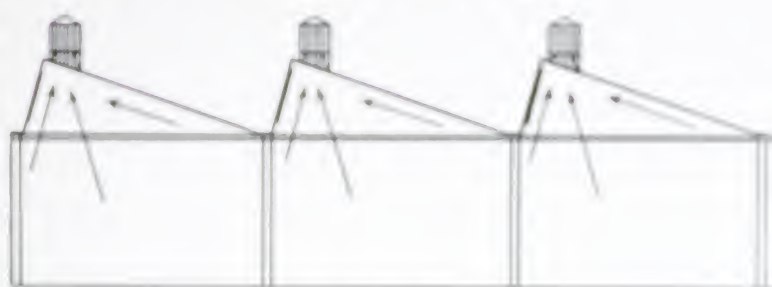


Figure 1

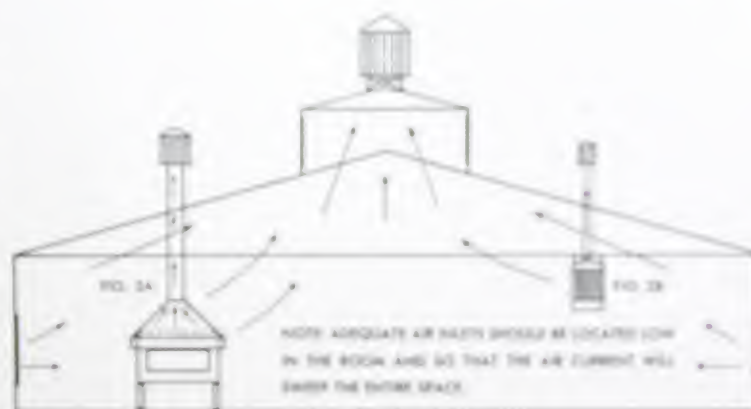


Figure 2

Hausters can be made in industrial plants to take care of special requirements for ventilation due to processes used or of particular sections which require separate treatment, such as offices, store rooms, locker rooms, toilet and dressing rooms, etc. Where hoods are used over ovens, rails, etc., Breidert Air-X-Hausters can be installed on stacks to increase the air movement (Note Figure 2A). Due to their "no back-draft" feature, Breidert Air-X-Hausters are especially adapted for use on "vent flues" from gas or oil burners to prevent pilot lights from blowing out (Note Figure 2B).

THE BREIDERT AIR-X-HAUSTER

Installations on Commercial and Public Buildings

Figure 1 . . . Sectional view of a flat roof building showing how Breidert Air-X-Hausters may be installed to reduce the temperature in the attic space and create a very effective circulation of air. Breidert Air-X-Hausters do not "back up" and carry in odors from adjoining buildings or force the heat of the attic space down into the rooms below. Ordinary louvre ventilators in side walls fail to create a circulation or ventilate the space below the attic.

During summer months, with Breidert Air-X-Hausters installed on the roof, the cool night air is drawn through the building without the use of fans or motors. The entire building is thus pre-cooled during the night. By insulating the attic floor, the pre-cooling effect is conserved through the heat of the next day. This combination of positive ventilation with attic floor insulation will give appreciable relief to those who cannot afford a more elaborate system.

Figure 2 . . . Cross section of an arch roof building. A number of Breidert Air-X-Hausters installed on the roof along the center of the building will exhaust the heat and foul air very effectively. The Type A Breidert Air-X-Hauster with weather vanes removes the bareness of the roof line. To get best results ventilators should be installed at the highest point of the roof.

Figure 3 . . . Typical installation of Type A Breidert Air-X-Hauster on a church. The hot air is exhausted out of the attic space in the same manner as shown in Figure 1, above. This provides a double benefit, by removing the blanket of hot air from the attic and by creating a positive air movement throughout the room as indicated by arrows. The room can also be pre-cooled before services by keeping air inlets open at night to draw the cool night air through the building to absorb the heat stored up in the walls and furnishings.

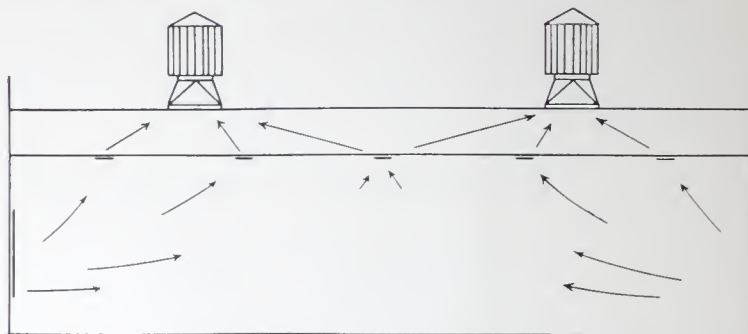


Figure 1

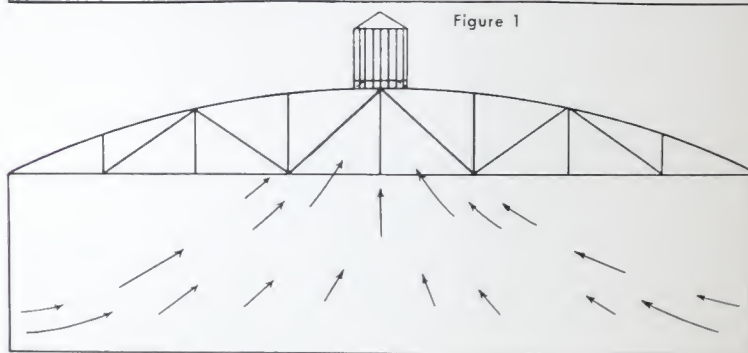


Figure 2

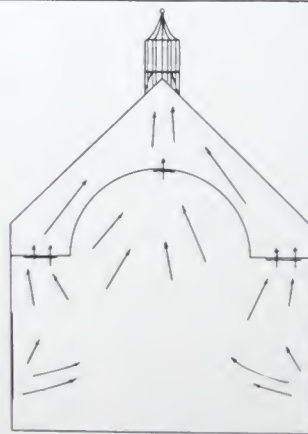


Figure 3

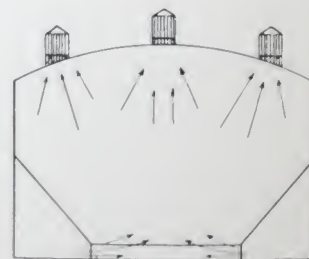


Figure 4

Figure 4 . . . Breidert Air-X-Hausters can be installed on the roof of gymnasiums, arenas and such buildings as shown to create an upward air movement through all parts of the room. Where heavy smoke prevails as in an arena, it is essential to provide sufficient ventilators to carry off the smoke rapidly. With ventilators installed on the highest point of the roof, and fresh air admitted near the floor line, a circulation as indicated with arrows will quickly carry the smoke and foul air above the occupied zone.

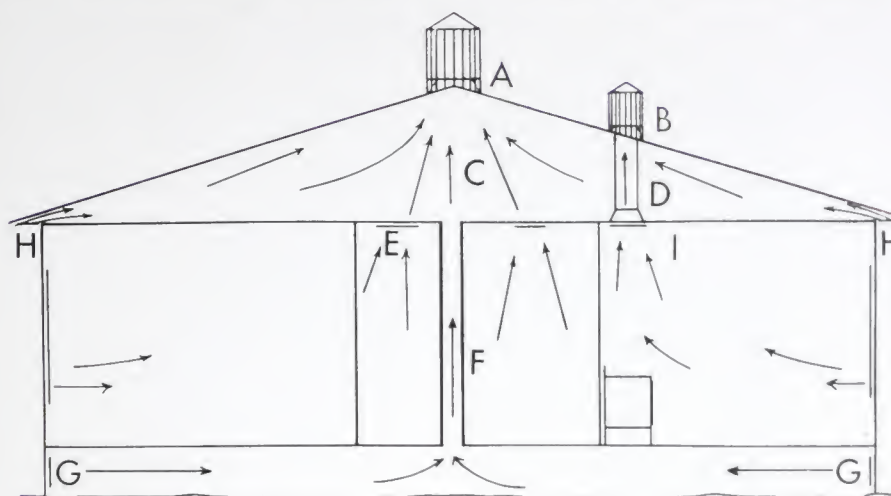
THE BREIDERT AIR-X-HAUSTER

Installations for Residence Cooling and Ventilation

At right is shown a Breidert Air-X-Hauster (Type A) installed on the ridge of a gable-roofed residence. In ordinary construction, with no ventilation, the attic temperature in such a house will often reach 120° to 130° with only 90° outdoors. By installing one or more Type A Breidert Air-X-Hauster, the hot air in the attic space (C) is exhausted as indicated by arrows. Register openings should be placed in the ceiling of clothes closets, hallways and bathrooms, as shown at (E). Additional screened openings ($\frac{1}{4}$ " mesh) placed under the eave at (H) will facilitate the circulation in the attic as shown. This method of attic cooling in conjunction with insulation as mentioned on page 6 produces very effective results, particularly since the cool night air can be circulated throughout the entire house thereby pre-cooling the building for the following day.

Architects and engineers will find this method of attic cooling practical in connection with the air conditioning systems for residences, commercial buildings and offices. It reduces the load on the compressor considerably. Heat loss can be checked in winter by simply closing the registers. The screened openings at (H) likewise may be closed if desired. This system is scientifically correct and costs little more than metal dormers or louver ventilators which are not effective.

Kitchen ventilation is now a recognized necessity. The simple yet effective system shown at (B) and (D) above is rapidly becoming popular. First, because there is no operating or maintenance cost. Second, there is no noise. Silently, night and day, a pleasing circulation of air removes every trace of cooking odors. A Breidert Air-X-Hauster (Type A) installed on the side slope of the roof, as illustrated at (B), with a vertical duct (D) down to a grill in the ceiling directly over the range, exhausts the heat and grease odors at their source (note circulation shown by arrows). Walls and decorations are protected from films of grease and accumulation of dust. This saving



alone warrants the expense. A transition from the register (closing type) shown at (I) connects with vertical duct (D).

The following sizes of ventilators and registers are recommended for one story residence and bungalow kitchens in the manner shown at (B) and (D).

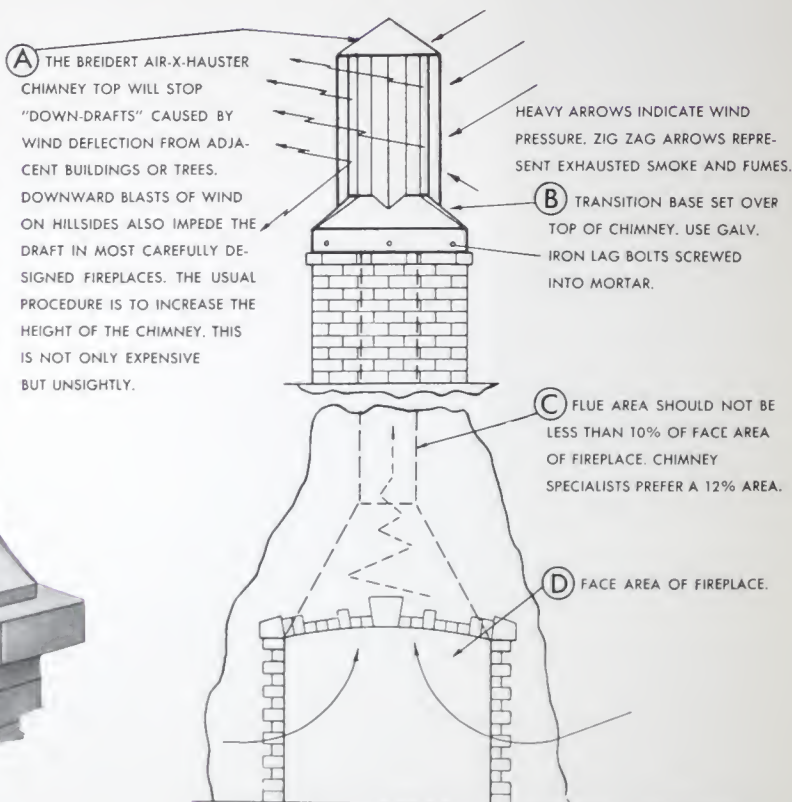
12" size for kitchens with	
750 to 1000 cubic feet	Use 14" x 14" Louvre Registers
10" size for kitchens with	
500 to 750 cubic feet	Use 12" x 12" Louvre Registers
8" size for kitchens with	
500 cubic feet or less	Use 10" x 10" Louvre Registers

Termite Control

Termite control experts agree that the space below the first floor and above the ground should be kept dry and well ventilated. A simple and effective system of ventilation is shown at (F). One or more vertical ducts extending from the basement (can be located in clothes closets) as illustrated will exhaust the air from the space under the first floor, into the attic and out through the ventilator on the ridge. Fresh air is automatically drawn in through side wall louvers (screened) as shown at (G). It is now compulsory in certain building codes to install such inlet openings as shown. Much greater effect is obtained by the addition of vertical ducts to a ventilated attic as described.

THE BREIDERT AIR-X-HAUSTER

Breidert Air-X-Hauster for Chimney Top



In many parts of the country fireplace chimneys and incinerator, gas boiler or furnace stacks become sluggish and subject to back-draft due to adverse high winds deflected downward from tall trees, adjacent buildings and hillsides. This is particularly true where residences are on hillsides or in mountain canyons. Smoky fireplaces make the room uninhabitable and damage decorations.

The drawing above shows the proper application of a Breidert Air-X-Hauster on a fireplace chimney. Contributing causes for sluggish flue action are (a) obstructions and heavy accumulation of soot in the flue (b) lack of air supply to the fire. Chimneys will not draw if the room or building has no source of air supply. A window (or special air inlet) should be slightly opened elsewhere in the house to admit air to relieve the vacuum caused by the ventilator. Excessive smoke is caused by accumulation

of ashes. A fire grate creates better fuel combustion and should be used, as a fire burns more freely if air is drawn in under the grate.

The size of the ventilator required is governed by the size of the flue. Note (C) in drawing. The area of the ventilator neck should be equal to, or slightly larger than the area of the flue. On double flue chimneys a single ventilator can be used. Simply figure the combined area of both flues and select a ventilator with the same total area. See page 13 for areas, etc.

Breidert Air-X-Hausters for Chimney Tops are made in sizes 8, 9, 10, 12, 14 and 16-inch, with bases to fit chimney. Dimensions are the same as the Type B-2 Breidert Air-X-Hauster (see pages 12, 13). All Chimney Tops are made of 20-gauge galvanized steel. Bases are not included as part of Chimney Tops.

THE BREIDERT AIR-X-HAUSTER

Breidert Air-X-Hauster Vent Flue Caps



Although there has been a great advance in combustion efficiency, too little thought is given to down-drafts in flues caused by adverse outside wind.

The most efficient heaters—using oil, gas or any other fuel—often perform quite differently in the field than in factory laboratories. This is generally due to varying wind conditions and downward wind pressure caused by adjacent high buildings, trees or hilly country. Our attention has been called to many high grade heaters which in one section performed in a most efficient manner, while in another it was difficult to keep pilot lights burning. In such cases, the first step is usually to turn up the pilot light which means greater gas consumption. This is a dangerous procedure in the event the pilot light is blown out, as the unburned gas will not rise upward into the flue if the draft is unsteady due to frequent down-draft.

There is one safe solution—namely, a Breidert Air-X-Hauster, which induces a draft when the wind blows instead of choking the flue and causing a down-draft. Many severe tests have been made with the Breidert Air-X-Hauster ventilator in which it proved vastly superior to other vent flue caps in creating a suction and preventing back-drafts. It is more compact and neater in appearance.

Vent flue cap sizes and dimensions are shown on pages 12 and 13.

The drawings on this page show the relative appearance of various types of vent flue caps of equal size as used in different parts of the country. The most commonly used heretofore is the plain double vent cap, Figure 1, and the "A" shaped vent, Figure 2. Both of these must be set high above a roof or parapet wall in order to avoid eddy currents caused by wind deflected from adjacent buildings, etc. In an identical application the Breidert Air-X-Hauster need not be set so high. In fact, it can be set next to a pitched roof as shown in Figure 3.

Heretofore it has been a practice to use individual flues for each heater on gas unit heaters, floor or wall types. This applies to residence heaters in territories where gas heat is commonly used. It is now practical to run several vent flues to one large Breidert Air-X-Hauster centrally located, as shown in Figure 4. This combines all vent outlets into one, thus eliminating the unsightly appearance of so many vent caps on a roof, and also saving on the cost. The area of the ventilator neck should equal the combined area of the flues leading into it.

Figure 5 illustrates another novel application. Here is shown a simple method of running one or more vent flues to a larger size Breidert Air-X-Hauster on the ridge with the balance of the ventilator neck left open to exhaust the attic heat. This is similar to the system shown on page 7 pertaining to residence cooling with night air.

NOTE: Ordinances in some cities covering vent flue applications were enacted prior to the development of the Breidert Air-X-Hauster. It may be necessary to secure the approval of your local building commission before making installations.

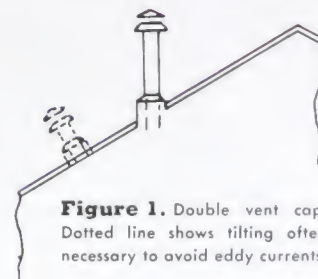


Figure 1. Double vent cap. Dotted line shows tilting often necessary to avoid eddy currents.

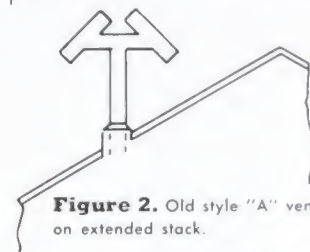


Figure 2. Old style "A" vent on extended stack.

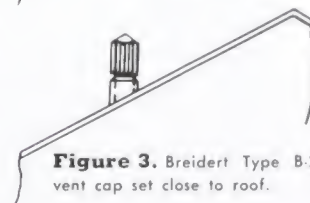


Figure 3. Breidert Type B-2 vent cap set close to roof.

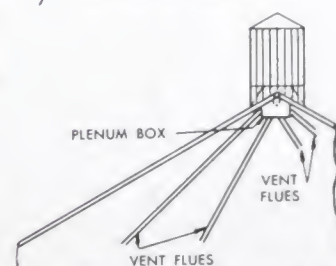


Figure 4. Larger size Breidert Air-X-Hauster handling a series of flues. Plenum box can be insulated with asbestos.

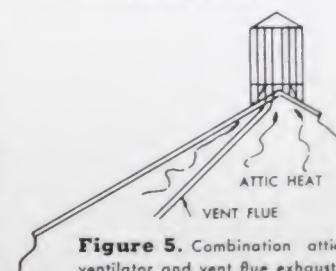
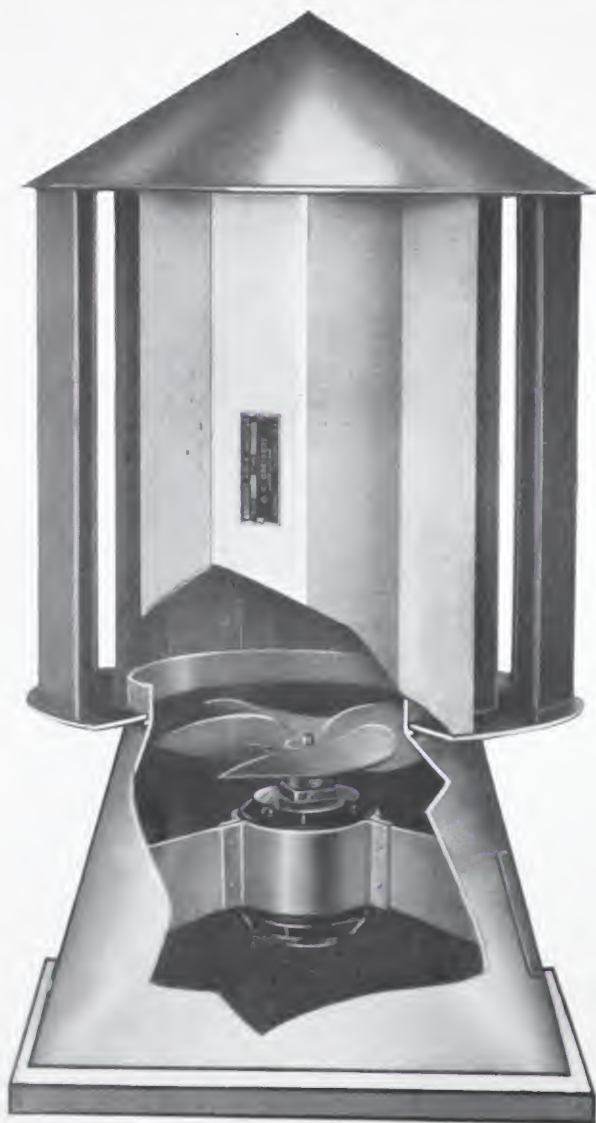


Figure 5. Combination attic ventilator and vent flue exhaust.

THE BREIDERT AIR-X-HAUSTER

Breidert Air-X-Hauster Motor and Fan Assemblies



Type MFS motor and fan assemblies can be installed in existing ventilators. Or this type ventilator can be built for a motor and fan assembly but erected less the assembly, which can be installed later. Write for further information.

When greater capacity is required on any ventilator installation than normal wind velocity will give, Breidert Air-X-Hausters can be equipped with motor driven fans. These fans are mounted in the base below the neck of the ventilator. The fan blade is the full diameter of the ventilator neck. The flare of the base gives clearance around the fan blades and compensates for the space occupied by the motor and fan blades. Thus the full capacity of the ventilator is retained when operating under natural draft only. This type of Breidert Air-X-Hauster is furnished only with the fan mounted in the base, which becomes part of the ventilator. See curb construction on next page.

With the wind blowing across the ventilator head at the same time the fan is operating, the output is increased by the natural suction of the ventilator in proportion to the wind velocity. This is the opposite effect to that of wind on an ordinary ventilating fan where the wind tends to reduce the capacity rather than to increase it. This makes the Breidert Air-X-Hauster, equipped with motor and fan, much more efficient than the ordinary type of exhaust fan installed in a penthouse. Such a Breidert Air-X-Hauster installation continues to act as a natural draft ventilator with full capacity during the night time or when the fan is not running. A fan in a penthouse has no appreciable action of this kind. A space equipped with such Breidert Air-X-Hausters will therefore be thoroughly ventilated and cooled by the circulation of night air through it.

Breidert Fan Type MFS

In the Type MFS Breidert Air-X-Hauster (left), the fan blade is mounted on the motor shaft up to and including the 24-inch size and the assembly is supported on a suspension bracket below the neck of the ventilator. On the 30-inch and larger sizes the fan is driven by a V belt and the motor is mounted to one side. Provision is made for oiling these assemblies from outside the ventilator when necessary. Access to the motor is through the neck of the ventilator when the installation is such that this opening is within reach. If not accessible in this manner, the entire ventilator head, up to the 16-inch size on the Type MFS, can be lifted off. On larger sizes a weather-proof access door is provided in the base.

THE BREIDERT AIR-X-HAUSTER



Breidert Fan Type MC

In the Type MC Breidert Air-X-Hauster (left), the fan blade is mounted in the base in the same location as in Type MFS, but the shaft is extended upward through the center of the ventilator. The motor is mounted inside of the conical top of the ventilator directly connected to the extended shaft on sizes up to and including the 24-inch. On 30-inch and larger sizes the motor is offset and the fan shaft is driven by a V belt.

On this type there is a solid top to the ventilator body which completely separates the motor compartment from the exhaust air passage. This motor space is well ventilated by outside air through a slot at the bottom edge completely around the cone.

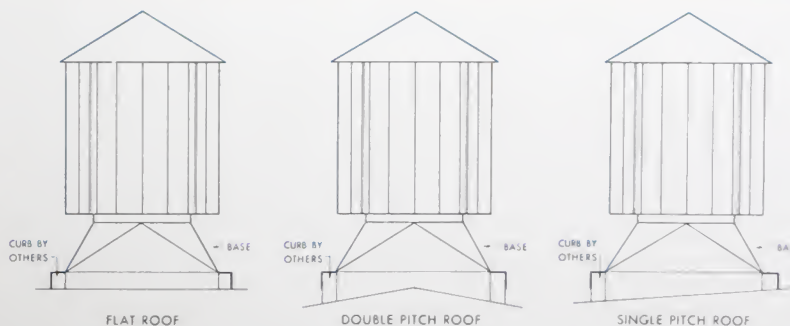
The Type MC has a great advantage over the Type MFS in that the motor is out of the path of the exhaust air. It is therefore protected against dust, moisture, fumes, excessive heat, etc., which may be present in the exhaust. It operates in a space well ventilated by circulation caused by wind pressure on the outside.

On the Type MC Breidert Air-X-Hauster, access to the motor is had by removing the top cone on sizes up to 20 inches. On larger sizes an access door is provided in the cone. The lower fan shaft bearing is lubricated through a tube leading from the bearing to a fitting on the outside of the base.

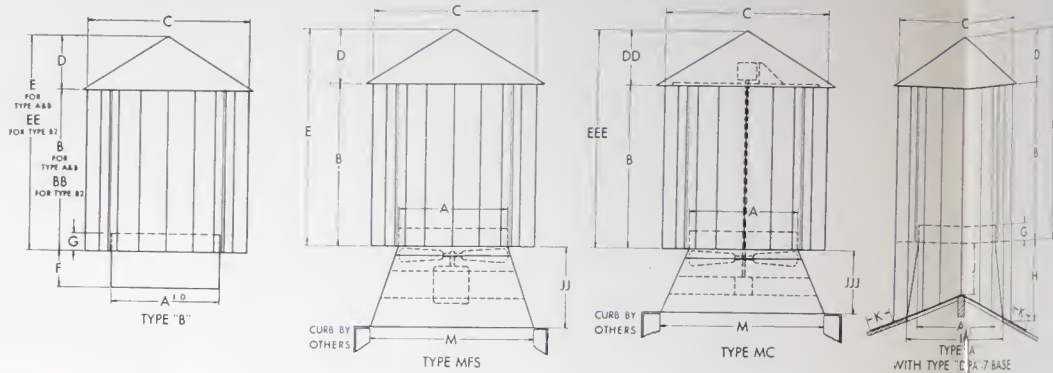
Types MFS and MC can be used in any of the applications for Type A or Type B ventilators described elsewhere in this book. Type MFS motor and fan assemblies can be applied to existing ventilators if desired.

Curb Construction

Types MFS and MC assemblies are supplied in FR4 bases only. Diagrams show how curbs should be constructed by customer on various types of roofs to fit the FR4 base.



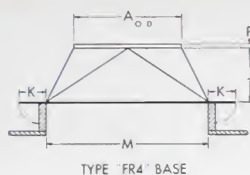
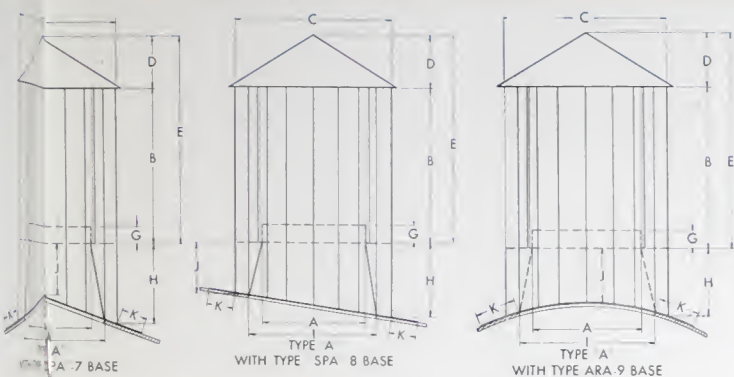
Construction Details of the Brei



Overall Dimensions

SIZE OF VENT	A	B	BB	C	D	E	EE	F	G	H	I (DIAM.)	J	K	M	P	DD
4	4"	6"	8"	6"	2"	8"	10"	2"	1"							
5	5"	7 1/2"	10"	7 1/2"	2 1/2"	10"	12 1/2"	2"	1"							
6	6"	9"	12"	9"	3"	12"	15"	2"	1"							
7	7"	10 1/2"	14"	10 1/2"	3 1/2"	14"	17 1/2"	2 1/2"	1 1/4"							
8	8"	12"	16"	12"	4"	16"	20"	2 1/2"	1 1/2"		10"	4"	6"			
9	9"	13 1/2"	18"	13"	4 1/2"	18"	22 1/2"	3"	1 1/2"		11 1/4"	4 1/2"	6"			
10	10"	15"	20"	15"	5"	20"	25"	3 1/2"	2"		12 1/2"	5"	6"			
12	12"	18"	24"	18"	6"	24"	30"	4"	2"		15"	6"	6"	18"	3"	
14	14"	21"		21"	7"	28"		4 1/2"	2 1/4"		17 1/2"	7"	6"	21"	3"	11
16	16"	24"		24"	8"	32"		5 1/2"	2 1/2"		20"	8"	6"	24"	3"	13
18	18"	27"		27"	9"	36"		6"	3"		22 1/2"	9"	6"	27"	3"	14
20	20"	30"		30"	10"	40"		6 1/2"	3 1/2"		25"	10"	6"	30"	3"	16
22	22"	33"		33"	11"	44"		7"	3 1/2"		27 1/2"	11"	6"	33"	3"	17
24	24"	36"		36"	12"	48"		8"	4"		30"	12"	6"	36"	3"	
26	26"	39"		39"	13"	52"		8"	4 1/4"		32 1/2"	13"	6"	39"	3"	20
28	28"	42"		42"	14"	56"		9"	4 1/2"		35"	14"	6"	42"	3"	
30	30"	45"		45"	15"	60"		10"	5"		37 1/2"	15"	8"	45"	4"	26
36	36"	54"		54"	18"	72"		12"	6"		45"	18"	10"	54"	4"	30
42	42"	63"		63"	21"	84"		14"	7"		52 1/2"	21"	12"	63"	4"	35
48	48"	72"		72"	24"	96"		18"	8"		60"	24"	12"	72"	4"	39

the Breidert Air-X-Hauster



Do not use plain round bases on 12" type B or larger ventilators. The square to round base "FR4," shown is more efficient, stronger, and neater looking.

Approximate Net Weights

	M	P	DD	EEE	JJ	JJJ	AREA NECK SQ. IN.	AREA NECK SQ. FT.	CIRC. NECK IN.	GA. METAL	TYPE A	TYPE B	TYPE B2	TYPE FR4 BASE
							12.5	.087	12.5	26			3	
							19.6	.139	15.7	26			4	
							28.3	.196	18.8	26			6	
							38.5	.267	22.0	26			8	
							50.3	.350	25.1	24	18	11	13	
							63.6	.441	28.3	24	22	14	16	
							78.5	.545	31.4	24	28	17	19	
18"	3"	11	29	18	14	113.1	.785	37.7	24	24	33	23	27	8 1/2
21"	3"	13	34	18	14	153.9	1.07	44.0	24	24	45	30		10 1/2
24"	3"	14	38	18	14	201.1	1.40	50.3	24	24	57	40		13
27"	3"	16	43	20	14	254.5	1.77	56.5	24	24	68	50		15
30"	3"	17	47	20	14	314.2	2.18	62.8	22	22	98	73		21
33"	3"					380.1	2.64	69.1	22	22	118	90		24
36"	3"	20	56	22	20	452.4	3.14	75.4	22	22	140	107		27
39"	3"					530.9	3.69	81.7	22	22	160	125		31
42"	3"					615.7	4.27	88.0	22	22	185	145		34
45"	4"	26	71	28	20	706.9	4.91	94.2	20	20	250	190		52
54"	4"	30	84	28	22	1017.9	7.07	113.1	20	20	365	280		75
63"	4"	35	98	30	22	1385.4	9.62	132.0	20	20	525	385		130
72"	4"	39	111	30	24	1809.6	12.57	150.8	20-18	20-18	835	650		160

THE BREIDERT AIR-X-HAUSTER

Performance Tables

TYPES MFS & MC

Vent. Size	Fan Size	Fan RPM	Motor HP	Static Pressure				
				.0"	.1"	.125"	.2"	.25"
				CFM Capacity				
12"	12"	*1140	*1/20	1000	865	827	695	575
		1725	1/8	1485	1395	1370	1300	1250
14"	14"	*11.40	*1/20	1290	....	....	....	....
		1140	1/12	1290	1130	1085	960	865
		1725	1/4	1930	1840	1790	1710	1655
16"	16"	*1140	*1/12	1770	....	....	....	....
		1140	1/8	1770	1655	1625	1510	1415
		1725	1/3	2660	2575	2555	2480	2430
18"	18"	*1140	*1/6	2340	2140	2080	1900	....
		1725	1/2	3560	3440	3410	3310	3240
20"	20"	*1140	*1/4	2690	2400	2350	2225	2150
24"	24"	*1140	*1/3	4490	4280	4220	4040	....
		1140	1/2	4490	4280	4220	4040	3870
30"	30"	* 750	*1/2	7450	6770	6575	....	....
		720	1/2	7150	6500	6325	5535	4885
		825	3/4	8200	7450	7260	6350	5620
36"	36"	* 600	*3/4	10000	7750	7460	....	....
		565	3/4	9400	7450	6915	4300	2655
		635	1	10600	8350	7910	6550	5880
42"	42"	* 575	*1	13000	9750	9000	6950	5700
		660	1-1/2	14915	12250	11550	9850	8745
48"	48"	* 550	*1-1/2	16500	13250	12650	11125	10340
		640	2	19200	16500	15900	14250	13475

*Standard motor H.P. and speeds.

For capacities at static pressures not listed refer to factory for special combinations of fan blades and motors.

Do not attempt to use Breidert Type MFS or MC Air-X-Hausters for static pressures higher than 1/4". Propeller-

type fans are not adapted to the higher pressures, as too great a strain is placed on the fan blades causing excessive vibration. The efficiency is also low. For such installations, use blowers.

THE BREIDERT AIR-X-HAUSTER

The capacity of Breidert Air-X-Hausters, as determined by air velocity through neck of ventilator, is governed by three factors: wind velocity across head of ventilator, height ventilator is mounted above air intake to room, and difference in temperature between interior and exterior of room.

Many tests have proved that the Breidert Air-X-Hauster has the very high ratio of 1 to 2 for relative velocity of air exhausted through ventilator to velocity of outside wind. This velocity through the ventilator is due to the suction action of wind blowing across ventilator head. The chart at bottom right shows this relationship.

To this velocity must be added the stack action caused by mounting height and temperature difference. The table at top right gives this added velocity for various heights and temperature differences. The capacity in cubic feet per minute (CFM) of any size ventilator can then be determined from the sum of these velocities multiplied by the area of the ventilator neck in square feet . . . See table page 13.

Example: A 5-mile wind produces a velocity through the ventilator of 220 feet per minute. With a ventilator mounted 15 feet above the floor, and a temperature difference of 20° between inside and outside air, there is an added velocity of 188 feet per minute due to the stack action. Thus the total velocity through the ventilator under these conditions is 408 feet per minute. A 12-inch ventilator has .785 square feet neck area; 408 feet per minute velocity multiplied by .785 square feet area gives 320 CFM. A 12-inch ventilator under these con-

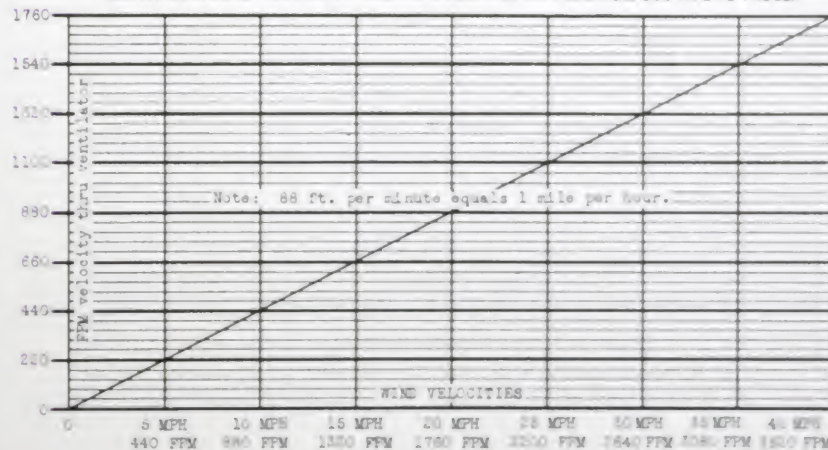
Capacity and Performance Tables

FLOW OF AIR IN FLUES BY NATURAL DRAFT IN CUBIC FEET PER MINUTE
AREA ONE SQUARE FOOT

DIFFERENCE IN TEMP. FAHR.	HEIGHT OF FLUE IN FEET SAME AS HEIGHT OF ROOM OR BUILDING								
	10	15	20	30	40	50	60	80	100
10	108	133	153	188	217	242	264	306	342
15	133	162	188	230	265	297	325	375	420
20	153	188	217	265	306	342	373	435	485
25	171	210	242	297	342	383	420	485	530
30	188	230	265	325	375	419	461	530	584
40	216	265	305	374	431	482	529	608	660
50	242	297	342	419	484	541	594	680	748
60	265	327	376	460	532	595	650	747	822

BREIDERT AIR-X-HAUSTER CAPACITY CHART

FEET VELOCITIES THRU VENTILATOR COMPARED WITH WIND VELOCITIES.
NOTE: ADD EXTRA VELOCITY FOR TEMPERATURE DIFFERENCE. SEE ABOVE TABLE.



ditions therefore has a capacity of 320 CFM. Capacities for any size and for any given conditions can be similarly determined. Tables on pages 18, 19 and 20 give capacities on this basis for different ventilator sizes with various combinations of wind velocity, mounting height and temperature differences.

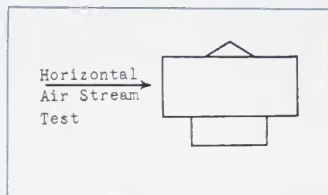
THE BREIDERT AIR-X-HAUSTER

Rigid Tests Prove Efficiency of Breidert Air-X-Hausters

Ventilating standards fifty years old or more are entirely inadequate for modern needs. Breidert Air-X-Hausters are designed to meet entirely *new* standards—the highest yet set up for natural draft ventilators. The methods used in testing the efficiency of the Breidert Air-X-Hauster under all wind conditions were probably the most severe ever devised and applied to a ventilator.

THE OLD METHOD

Under old testing methods, ventilators are required to show results only with the wind blowing on a horizontal plane. Such tests cannot reveal true performance under actual operating conditions. Actually, variable wind conditions generally prevail which cause air currents to strike at various angles. In addition, obstructions change the course of the wind, causing it to become turbulent and to strike at many angles simultaneously. With some ventilators, wind striking at angles other than horizontal causes severe down-drafts or stagnation.

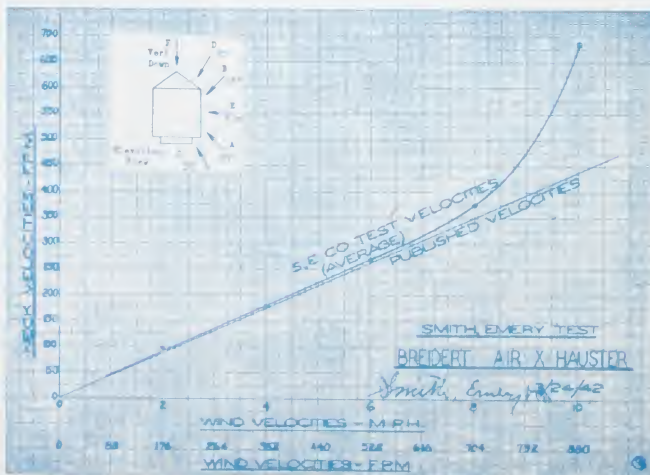
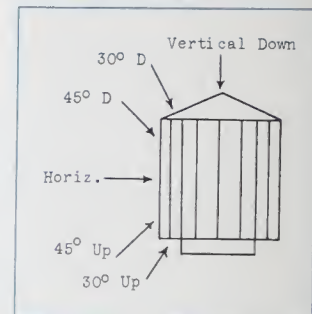


These tests, made in the San Francisco laboratories of Smith, Emery & Co., Pacific Coast branch of the Pittsburgh Testing Laboratories, involved the use of a wind tunnel similar to those used in testing airplanes (see photographs below).

Equally severe tests have been made by other recognized, highly official authorities, with similar results.

THE BREIDERT METHOD

The certified ratings of Breidert Air-X-Hausters are based on more than 1200 anemometer readings taken with wind pressure directed at the various angles indicated at right. Only such testing methods can absolutely assure the scientific, positive performance of a ventilator under true wind conditions.



Results of the Smith, Emery tests are shown on this chart. Note that test velocities, indicated by top curve, are higher than velocities claimed by the manufacturer. Note also that a wind velocity of 8 miles per hour is the critical point at which the corresponding efficiency curve of the Breidert Air-X-Hauster begins to rise sharply, due to increasing wind pressure becoming equalized all around the ventilator. With many other types of ventilators increased wind velocity means lessened efficiency.



These photographs show the wind tunnel used in testing the Breidert Air-X-Hauster by Smith, Emery & Co. Inset shows ventilator in position in tunnel, ready for testing.

SMITH, EMERY & COMPANY

ESTABLISHED 1904
ENGINEERS - CHEMISTS

651 HOWARD STREET
SAN FRANCISCO

SE.NO. 165597

March 24, 1942

Test of 16" Type B,
Breidert Air-X-Hauster

The G. C. Breidert Co.,
#3228 S. Central Ave.,
Los Angeles, Calif.

REPORT

Gentlemen:

In accordance with instructions our Mr. E.I. Rodgers has conducted tests on a 16" Type B Breidert Air-X-Hauster ventilator at 2, 4, 6, 8 and 10 miles per hour wind velocities. Tests were made between March 17 - 23 inclusive.

A 5-H.P. blower fan was used in connection with a specially constructed test tunnel to produce 2 to 10 mile velocities. No attempt was made to straighten the air stream or remove turbulence.

The ventilator was mounted on a 16" neck and anemometer readings were taken at the inlet. The anemometer was recently calibrated. No tests were made with stack or with temperature differential. The air struck the ventilator from certain angles:

- a: Upward at an angle of 45° from perpendicular
- b: Downward " " " 30° " "
- c: Upward " " " 30° " "
- d: Downward " " " 30° " "
- e: Horizontally, the ventilator vertical
- f: The air striking squarely on top of the ventilator cone.

There was an absence of downdraft. And at no time was there a suggestion of stagnation in the throat of the ventilator, or the inlet piece in which the readings were taken.

The following velocities were observed:

MPH	a	b	c	d	e	f
2	100	97	92	102	97	100
4	169	161	185	175	176	188
6	255	261	280	291	268	256
8	370	396	360	371	380	370
10	698	649	589	607	720	863

Respectfully submitted,

Smith, Emery & Co.
INSPECTING & TESTING ENGINEERS

Report of Smith, Emery & Co. certifying the velocities and performance of Breidert Air-X-Hausters, and stating conditions of tests. Note paragraph regarding the absence of down-draft or stagnation.

8" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — .350 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap.CFM	15 deg. Cap.CFM	20 deg. Cap.CFM	25 deg. Cap.CFM	30 deg. Cap.CFM	40 deg. Cap.CFM	50 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM
4	10 ft.	100	108	115	121	127	138	146	154	166	175
	15 "	108	116	123	129	135	146	154	166	175	183
	20 "	115	123	130	137	144	154	166	175	183	191
	25 "	121	129	136	143	150	160	171	183	191	200
	30 "	127	135	142	149	156	166	177	189	197	206
	40 "	137	145	152	159	166	177	189	200	209	218
5	10 ft.	115	123	130	137	144	154	166	175	183	191
	15 "	123	130	137	144	150	160	171	183	191	200
	20 "	131	138	145	152	159	169	180	192	200	209
	25 "	137	145	152	159	166	177	189	200	209	218
	30 "	143	150	157	164	171	181	192	204	212	220
	40 "	153	160	167	174	181	192	204	215	224	232
6	10 ft.	130	138	145	152	159	169	180	192	200	209
	15 "	139	146	153	160	167	177	189	200	209	218
	20 "	146	153	160	167	174	184	196	207	216	224
	25 "	152	159	166	173	180	190	202	213	222	230
	30 "	158	165	172	179	186	196	208	219	228	236
	40 "	168	175	182	189	196	206	218	229	238	246
8	10 ft.	168	175	182	189	196	206	218	229	238	246
	15 "	175	182	189	196	203	213	225	236	245	253
	20 "	183	190	197	204	211	221	233	244	253	261
	25 "	189	196	203	210	217	227	239	250	259	267
	30 "	195	202	209	216	223	233	245	256	265	273
	40 "	208	215	222	229	236	246	258	269	278	286
10	10 ft.	192	200	207	214	221	231	243	254	263	271
	15 "	200	207	214	221	228	238	250	261	270	278
	20 "	208	215	222	229	236	246	258	269	278	286
	25 "	214	221	228	235	242	252	264	275	284	292
	30 "	220	227	234	241	248	258	270	281	290	298
	40 "	230	237	244	251	258	268	280	291	300	308
12	10 ft.	223	231	238	245	252	262	274	285	294	302
	15 "	231	238	245	252	259	269	281	292	301	309
	20 "	238	245	252	259	266	276	288	299	308	316
	25 "	245	252	259	266	273	283	295	306	315	323
	30 "	251	258	265	272	279	289	301	312	321	329
	40 "	260	267	274	281	288	298	310	321	330	338

10" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — .545 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap.CFM	15 deg. Cap.CFM	20 deg. Cap.CFM	25 deg. Cap.CFM	30 deg. Cap.CFM	40 deg. Cap.CFM	50 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM
4	10 ft.	155	168	179	189	198	214	228	240	258	273
	15 "	168	184	198	210	221	240	258	273	299	325
	20 "	179	198	214	228	240	263	282	300	324	348
	25 "	189	210	228	242	258	282	305	324	359	384
	30 "	198	221	240	257	273	300	324	359	384	420
	40 "	214	240	262	281	300	331	360	391	420	450
5	10 ft.	179	192	203	213	222	238	252	264	282	297
	15 "	192	208	222	234	245	264	282	306	329	349
	20 "	203	222	238	246	264	287	306	324	342	371
	25 "	213	234	252	267	282	306	329	349	371	408
	30 "	222	245	264	281	297	324	342	371	408	444
	40 "	238	264	286	305	324	355	384	415	444	474
6	10 ft.	203	216	227	237	246	262	276	288	306	321
	15 "	216	232	246	258	269	288	311	330	347	373
	20 "	227	246	262	270	288	311	330	347	373	399
	25 "	237	258	276	291	306	330	347	373	399	425
	30 "	246	268	288	305	321	348	379	407	432	458
	40 "	262	288	310	329	348	379	407	432	458	484
8	10 ft.	251	264	275	285	294	310	324	336	354	369
	15 "	264	280	294	306	317	336	359	378	401	421
	20 "	275	294	310	324	336	359	378	401	421	443
	25 "	285	306	324	339	354	378	401	421	443	465
	30 "	294	317	336	353	369	396	420	446	471	493
	40 "	310	336	358	377	396	420	446	471	493	515
10	10 ft.	299	312	323	333	342	358	372	384	402	417
	15 "	312	328	342	358	366	384	407	426	443	469
	20 "	323	342	358	377	387	407	426	443	469	491
	25 "	333	354	372	391	401	421	441	461	481	503
	30 "	342	364	384	405	425	445	465	485	505	528
	40 "	358	384	406	426	447	468	489	510	530	554
12	10 ft.	347	360	371	381	390	406	420	432	449	464
	15 "	360	376	390	402	413	432	445	457	474	491
	20 "	371	390	406	420	435	450	462	474	491	509
	25 "	381	402	420	435	449	465	480	492	509	528
	30 "	390	413	432	449	465	480	492	509	528	547
	40 "	406	432	451	473	492	515	530	543	561	580

12" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — .785 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap.CFM	15 deg. Cap.CFM	20 deg. Cap.CFM	25 deg. Cap.CFM	30 deg. Cap.CFM	40 deg. Cap.CFM	50 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM	60 deg. Cap.CFM
4	10 ft.	223	242	258	271	286	308	328	345	365	384
	15 "	242	265	285	302	319	346	371	393	413	432
	20 "	258	286	308	327	346	378	406	439	468	493
	25 "	272	303	328	349	371	406	439	468	493	515
	30 "	286	319	346	370	393	432	467	500	528	554
	40 "	306	342	377	404	432	476	515	553	588	614
5	10 ft.	231	251	268	284	299	324	348	368	388	407
	15 "	251	271	289	307	324	354	384	413	442	469
	20 "	268	291	311	331	351	386	420	454	488	515
	25 "	284	307	328	349	371	406	439	468	493	515
	30 "	299	324	346	369	393	432	467	500	528	554
	40 "	319	346	370	393	413	454	493	531	566	592
6	10 ft.	242	262	280	298	314	344	368	388	407	426
	15 "	262	284	304	324	344	380	413	442	471	493
	20 "	280	304	326	349	371	406	439	468	493	515
	25 "	298	322	345	369	393	432	467	500	528	554
	30 "	314	340	364	389	413	454	493	531	566	592
	40 "	334	360	384	409	432	476	515	553	588	614
8	10 ft.	262	282	302	322	342	378	413	442	471	493
	15 "	282	304	326	349	371	406	439	468	493	515
	20 "	302	326	349	371	393	432	467	500	528	554
	25 "	322	345	369	393	413	454	493	531	566	592
	30 "	342	366	390	413	432	476	515	553	588	614
	40 "	362	386	410	432	454	493	531	566	592	614
10	10 ft.	282	302	322	342	362	402	432	462	492	512
	15 "	302	322	342	362	382	422	452	482	512	532
	20 "	322	342	362	382	402	442	472	502	532	552
	25 "	342	362	382	402	422	462	492	522	552	572
	30 "	362	382	402	422	442	482	512	542	572	592
	40 "	382	402	422	442	462	502	532	562	592	612
12	10 ft.	302	322	342	362	382	422	452	482	512	532
	15 "	322	342	362	382	402	442	472	502	532	552
	20 "	342	362	382	402	422	462	492	522	552	572
	25 "	362	382	402	422	442	482	512	542	572	592
	30 "	382	402	422	442	462	502	532	562	592	612
	40 "	402	422	442	462	482	522	552	582	612	632

14" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 1.07 Sq. Feet

Wind Vel.

16" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 1.40 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors							
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM
4	10 ft.	397	432	509	539	585	550	585	616
	15 "	432	473	559	589	635	600	635	666
	20 "	460	509	595	625	671	636	671	702
	25 "	485	540	625	655	701	666	701	732
	30 "	509	565	651	681	727	692	727	758
	40 "	548	617	703	733	779	744	779	810
5	10 ft.	585	662	772	802	848	813	848	879
	15 "	618	704	814	844	890	855	890	921
	20 "	647	733	843	873	919	884	919	950
	25 "	671	767	877	907	953	918	953	984
	30 "	695	791	901	931	977	942	977	1008
	40 "	734	830	940	970	1016	981	1016	1047
6	10 ft.	802	889	1009	1039	1085	1050	1085	1116
	15 "	836	922	1042	1072	1118	1083	1118	1149
	20 "	860	946	1066	1096	1142	1107	1142	1173
	25 "	884	970	1090	1120	1166	1131	1166	1197
	30 "	908	994	1114	1144	1190	1155	1190	1221
	40 "	947	1033	1153	1183	1229	1194	1229	1260
8	10 ft.	1039	1126	1246	1276	1322	1287	1322	1353
	15 "	1073	1159	1279	1309	1355	1320	1355	1386
	20 "	1097	1183	1303	1333	1379	1344	1379	1410
	25 "	1121	1207	1327	1357	1403	1368	1403	1434
	30 "	1145	1231	1351	1381	1427	1392	1427	1458
	40 "	1184	1270	1390	1420	1466	1431	1466	1497
10	10 ft.	1221	1308	1428	1458	1504	1469	1504	1535
	15 "	1255	1341	1461	1491	1537	1502	1537	1568
	20 "	1279	1365	1485	1515	1561	1526	1561	1592
	25 "	1303	1389	1509	1539	1585	1550	1585	1616
	30 "	1327	1413	1533	1563	1609	1574	1609	1640
	40 "	1366	1452	1572	1602	1648	1613	1648	1679
12	10 ft.	1410	1497	1617	1647	1693	1658	1693	1724
	15 "	1444	1530	1650	1680	1726	1691	1726	1757
	20 "	1468	1554	1674	1704	1750	1715	1750	1781
	25 "	1492	1578	1698	1728	1774	1739	1774	1805
	30 "	1516	1602	1722	1752	1798	1763	1798	1829
	40 "	1555	1641	1761	1791	1837	1802	1837	1868

18" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 1.77 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors							
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM
4	10 ft.	503	547	583	613	645	609	645	676
	15 "	547	591	627	657	689	653	689	720
	20 "	583	627	663	693	725	689	725	756
	25 "	615	659	695	725	757	721	757	788
	30 "	645	689	725	755	787	751	787	818
	40 "	694	738	774	804	836	799	836	867
5	10 ft.	740	784	820	850	882	846	882	913
	15 "	784	828	864	894	926	890	926	957
	20 "	820	864	900	930	962	926	962	993
	25 "	852	896	932	962	994	958	994	1025
	30 "	882	926	962	992	1024	988	1024	1055
	40 "	931	975	1011	1041	1073	1037	1073	1104
6	10 ft.	882	926	962	992	1024	988	1024	1055
	15 "	926	970	1006	1036	1068	1032	1068	1099
	20 "	962	1006	1042	1072	1104	1068	1104	1135
	25 "	994	1038	1074	1104	1136	1100	1136	1167
	30 "	1024	1068	1104	1134	1166	1130	1166	1197
	40 "	1073	1117	1153	1183	1215	1179	1215	1246
8	10 ft.	1024	1068	1104	1134	1166	1130	1166	1197
	15 "	1068	1112	1148	1178	1210	1174	1210	1241
	20 "	1104	1148	1184	1214	1246	1210	1246	1277
	25 "	1136	1180	1216	1246	1278	1242	1278	1309
	30 "	1166	1210	1246	1276	1308	1272	1308	1339
	40 "	1215	1259	1295	1325	1357	1321	1357	1388
10	10 ft.	1215	1259	1295	1325	1357	1321	1357	1388
	15 "	1259	1303	1339	1369	1401	1365	1401	1432
	20 "	1295	1339	1375	1405	1437	1401	1437	1468
	25 "	1325	1369	1405	1435	1467	1431	1467	1498
	30 "	1357	1401	1437	1467	1499	1463	1499	1530
	40 "	1406	1450	1486	1516	1548	1512	1548	1579
12	10 ft.	1406	1450	1486	1516	1548	1512	1548	1579
	15 "	1450	1494	1530	1560	1592	1556	1592	1623
	20 "	1486	1530	1566	1596	1628	1592	1628	1659
	25 "	1516	1560	1596	1626	1658	1622	1658	1689
	30 "	1548	1592	1628	1658	1690	1654	1690	1721
	40 "	1607	1651	1687	1717	1749	1713	1749	1780

20" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 2.18 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors							
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM
4	10 ft.	619	674	734	764	800	764	800	831
	15 "	674	734	794	824	860	824	860	891
	20 "	718	774	834	864	900	864	900	931
	25 "	757	814	874	904	940	904	940	971
	30 "	794	850	910	940	976	940	976	1007
	40 "	855	911	971	1001	1037	1001	1037	1068
5	10 ft.	912	968	1028	1058	1094	1058	1094	1125
	15 "	968	1024	1084	1114	1150	1114	1150	1181
	20 "	1007	1063	1123	1153	1189	1153	1189	1220
	25 "	1046	1102	1162	1192	1228	1192	1228	1259
	30 "	1085	1141	1201	1231	1267	1231	1267	1298
	40 "	1146	1202	1262	1292	1328	1292	1328	1359
6	10 ft.	1221	1277	1337	1367	1403	1367	1403	1434
	15 "	1277	1333	1393	1423	1459	1423	1459	1490
	20 "	1316	1372	1432	1462	1498	1462	1498	1529
	25 "	1355	1411	1471	1501	1537	1501	1537	1568
	30 "	1394	1450	1510	1540	1576	1540	1576	1607
	40 "	1455	1511	1571	1601	1637	1601	1637	1668
8	10 ft.	1516	1572	1632	1662	1708	1662	1708	1739
	15 "	1572	1628	1688	1718	1754	1718	1754	1785
	20 "	1611	1667	1727	1757	1793	1757	1793	1824
	25 "	1650	1706	1766	1796	1832	1796	1832	1863
	30 "	1689	1745	1805	1835	1871	1835	1871	1902
	40 "	1750	1806	1866	1896	1932	1896	1932	1963
10	10 ft.	1846	1902	1962	1992	2038	1992	2038	2069
	15 "	1902	1958	2018	2048	2084	2048	2084	2115
	20 "	1941	1997	2057	2087	2123	2087	2123	2154
	25 "	1980	2036	2096	2126	2162	2126	2162	2193
	30 "	2019	2075	2135	2165	2201	2165	2201	2232
	40 "	2080	2136	2196	2226	2262	2226	2262	2293
12	10 ft.	2176	2232	2292	2322	2368	2322	2368	2399
	15 "	2232	2288	2348	2378	2414	2378	2414	2445
	20 "	2271	2327	2387	2417	2453	2417	2453	2484
	25 "	2310	2366	2426	2456	2492	2456	2492	2523
	30 "	2349	2405	2465	2495	2531	2495	2531	2562
	40 "	2410	2466	2526	2556	2592	2556	2592	2623

24" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 3.14 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors							
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM
4	10 ft.	892	971	1031	1087	1143	1234	1313	1382
	15 "	971	1062	1123	1209	1275	1385	1486	1573
	20 "	1031	1143	1214	1310	1385	1514	1627	1724
	25 "	1090	1212	1313	1398	1436	1625	1756	1872
	30 "	1143	1275	1385	1479	1573	1730	1869	2001
	40 "	1231	1385	1511	1617	1727	1906	2066	2214
5	10 ft.	1313	1486	1627	1746	1869	2073	2252	2418
	15 "	1388	1580	1734	1866	1997	2223	2421	2594
	20 "	1452	1662	1816	1957	2097	2342	2519	2682
	25 "	1511	1739	1900	2041	2181	2444	2621	2774
	30 "	1570	1813	1983	2124	2264	2546	2723	2876
	40 "	1644	1896	2076	2217	2357	2659	2836	2989
6	10 ft.	1664	1856	2012	2142	2273	2499	2697	2870
	15 "	1718	1928	2094	2224	2355	2600	2797	2950
	20 "	1787	2006	2181	2311	2442	2697	2894	3047
	25 "	1862	2090	2274	2404	2535	2800	2997	3150
	30 "	1940	2178	2371	2501	2632	2907	3104	3257
	40 "	2028	2276	2478	2608	2739	3024	3221	3374
8	10 ft.	1940	2132	2286	2416	2547	2775	2973	3146
	15 "	2012	2214	2378	2508	2639	2877	3075	3248
	20 "	2094	2306	2479	2609	2740	2978	3176	3349
	25 "	2181	2402	2584	2714	2845	3092	3290	3463
	30 "	2264	2494	2685	2815	2946	3202	3400	3573
	40 "	2357	2596	2796	2926	3057	3323	3521	3694
10	10 ft.	2217	2409	2563	2695	2826	3052	3250	3423
	15 "	2276	2478	2641	2772	2903	3129	3327	3499
	20 "	2342	2553	2724	2855	2986	3223	3421	3594
	25 "	2417	2637	2817	2948	3079	3325	3523	3696
	30 "	2499	2728	2917	3048	3179	3434	3632	3805
	40 "	2594	2832	3030	3161	3292	3557	3755	3928
12	10 ft.	2499	2691	2854	2986	3117	3343	3541	3714
	15 "	2573	2774	2946	3077	3208	3434	3632	3805
	20 "	2659	2870	3050	3181	3312	3548	3746	3919
	25 "	2747	2967	3147	3278	3409	3654	3852	4024
	30 "	2836	3065	3245	3376	3507	3761	3959	4100
	40 "	2928	3166	3345	3476	3607	3871	4069	4243

30" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 4.91 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM		
4	10 ft.	1397	1520	1119	1702	1791	1934	2057	2165		
	15 "	1520	1663	1791	1894	1998	2170	2327	2465		
	20 "	1619	1791	1934	2052	2170	2372	2549	2701		
	25 "	1707	1899	2057	2189	2327	2549	2750	2932		
	30 "	1791	1998	2170	2317	2465	2711	2927	3134		
	40 "	1921	2190	2367	2534	2706	2987	3237	3469		
5	10 ft.	2057	2327	2549	2736	2927	3129	3463	3788		
	15 "	2170	2475	2716	2923	3129	3463	3788	4064		
	20 "	2317	2649	2927	3129	3463	3788	4064	4381		
	25 "	2465	2816	3129	3463	3788	4064	4381	4698		
	30 "	2549	2927	3129	3463	3788	4064	4381	4698		
	40 "	2701	3129	3463	3788	4064	4381	4698	5015		
6	10 ft.	2932	3469	3788	4064	4381	4698	5015	5332		
	15 "	3129	3788	4064	4381	4698	5015	5332	5649		
	20 "	3469	4064	4381	4698	5015	5332	5649	5966		
	25 "	3788	4381	4698	5015	5332	5649	5966	6283		
	30 "	4064	4698	5015	5332	5649	5966	6283	6599		
	40 "	4381	5015	5332	5649	5966	6283	6599	6916		
8	10 ft.	5015	5649	5966	6283	6599	6916	7232	7549		
	15 "	5332	5966	6283	6599	6916	7232	7549	7866		
	20 "	5649	6283	6599	6916	7232	7549	7866	8183		
	25 "	5966	6599	6916	7232	7549	7866	8183	8499		
	30 "	6283	6916	7232	7549	7866	8183	8499	8816		
	40 "	6599	7232	7549	7866	8183	8499	8816	9133		
10	10 ft.	6916	7549	7866	8183	8499	8816	9133	9449		
	15 "	7232	7866	8183	8499	8816	9133	9449	9766		
	20 "	7549	8183	8499	8816	9133	9449	9766	10083		
	25 "	7866	8499	8816	9133	9449	9766	10083	10399		
	30 "	8183	8816	9133	9449	9766	10083	10399	10716		
	40 "	8499	9133	9449	9766	10083	10399	10716	11033		
12	10 ft.	8816	9449	9766	10083	10399	10716	11033	11349		
	15 "	9133	9766	10083	10399	10716	11033	11349	11666		
	20 "	9449	10083	10399	10716	11033	11349	11666	11983		
	25 "	9766	10399	10716	11033	11349	11666	11983	12299		
	30 "	10083	10716	11033	11349	11666	11983	12299	12616		
	40 "	10399	11033	11349	11666	11983	12299	12616	12933		

36" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 7.07 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM		
4	10 ft.	2011	2188	2329	2450	2577	2782	2959	3115		
	15 "	2188	2393	2577	2726	2872	3122	3349	3547		
	20 "	2329	2577	2782	2952	3122	3412	3667	3887		
	25 "	2457	2733	2959	3151	3349	3667	3958	4220		
	30 "	2577	2874	3122	3335	3547	3901	4213	4501		
	40 "	2775	3122	3405	3646	3894	4297	4659	4991		
5	10 ft.	2959	3349	3667	3936	4213	4673	5076	5452		
	15 "	3129	3561	3908	4205	4503	5013	5459	5848		
	20 "	3323	3750	4064	4362	4659	5204	5673	6082		
	25 "	3500	3927	4241	4539	4836	5404	5893	6322		
	30 "	3677	4104	4418	4716	5013	5604	6113	6562		
	40 "	3875	4302	4616	4914	5211	5824	6353	6822		
6	10 ft.	4104	4531	4845	5143	5440	6076	6625	7114		
	15 "	4281	4708	5022	5320	5617	6276	6845	7354		
	20 "	4458	4885	5199	5497	5794	6476	7065	7594		
	25 "	4635	5062	5376	5674	5971	6676	7285	7834		
	30 "	4812	5239	5553	5851	6148	6876	7505	8074		
	40 "	5010	5437	5751	6049	6346	7096	7745	8334		
8	10 ft.	5239	5666	5980	6278	6575	7346	7915	8444		
	15 "	5416	5843	6157	6455	6752	7546	8135	8684		
	20 "	5593	6020	6334	6632	6929	7746	8355	8924		
	25 "	5770	6197	6511	6809	7106	7946	8575	9164		
	30 "	5947	6374	6688	6986	7283	8146	8795	9404		
	40 "	6145	6572	6886	7184	7481	8366	9035	9664		
10	10 ft.	6374	6801	7115	7413	7710	8596	9185	9774		
	15 "	6551	6978	7292	7590	7887	8802	9411	10020		
	20 "	6728	7155	7469	7767	8064	9000	9629	10258		
	25 "	6905	7332	7646	7944	8241	9206	9855	10484		
	30 "	7082	7509	7823	8121	8418	9404	10073	10702		
	40 "	7280	7707	8021	8319	8616	9629	10318	10967		
12	10 ft.	7478	7905	8219	8517	8814	9840	10539	11188		
	15 "	7655	8082	8396	8694	8991	10046	10765	11424		
	20 "	7832	8259	8573	8871	9168	10242	10981	11660		
	25 "	8010	8437	8751	9049	9346	10440	11199	11898		
	30 "	8187	8614	8928	9226	9523	10646	11425	12144		
	40 "	8385	8812	9126	9424	9721	10874	11673	12412		

42" Breidert Air-X-Hauster

Capacity — Cubic Feet Per Minute • Neck Area — 9.6 Sq. Feet

Wind Vel. MPH	Height Above Intake	Temperature Difference Between In and Out Doors									
		10 deg. Cap. CFM	15 deg. Cap. CFM	20 deg. Cap. CFM	25 deg. Cap. CFM	30 deg. Cap. CFM	40 deg. Cap. CFM	50 deg. Cap. CFM	60 deg. Cap. CFM		
4	10 ft.	2738	2979	3172	3335	3509	3783	4054	4330		
	15 "	2979	3259	3509	3712	3914	4252	4560	4830		
	20 "	3172	3509	3783	4020	4252	4647	4994	5293		
	25 "	3345	3721	4030	4200	4560	4994	5389	5746		
	30 "	3509	3914	4252	3541	4830	5312	5736	6141		
	40 "	3773	4252	4637	4965	5302	5852	6343	6797		
5	10 ft.	4261	4849	5332	5720	6111	6825	7433	7963		
	15 "	4612	5303	5596	5767	6033	6854	7466	8000		
	20 "	4849	5683	5933	6136	6388	7294	7933	8484		
	25 "	5096	5933	6213	6444	6676	7671	8318	8877		
	30 "	5345	6183	6464	6695	6926	7921	8568	9127		
	40 "	5594	6432	6713	6944	7175	8170	8817	9376		
6	10 ft.	5885	6723	7004	7235	7466	8461	9108	9667		
	15 "	6236	7074	7355	7586	7817	8812	9459	10018		
	20 "	6483	7321	7602	7833	8064	9059	9706	10265		
	25 "	6730	7568	7849	8080	8311	9306	9953	10512		
	30 "	6977	7815	8096	8327	8558	9553	10200	10759		
	40 "	7224	8062	8343	8574	8805	9800	10447	11006		
8	10 ft.	7443	8281	8562	8793	9024	10019	10666	11225		
	15 "	7794	8632	8913	9144	9375	10370	11017	11576		
	20 "	8041	8879	9160	9391	9622	10617	11264	11823		
	25 "	8288	9126	9407	9638	9869	10864	11511	12070		
	30 "	8535	9373	9654	9885	10116	11111	11758	12317		
	40 "	8782	9620	9901	10132	10363	11358	12005	12564		
10	10 ft.	8601	9439	9720	9951	10182	11177	11824	12383		
	15 "	8952	9790	10071	10302	10533	11528	12175	12734		
	20 "	9203	10041	10322	10553	10784	11779	12426	12985		
	25 "	9454	10292	10573	10804	11035	12030	12677	13236		
	30 "	9705	10543	10824	11055	11286	12281	12928	13487		
	40 "	9956	10794	11075	11306	11537	12532	13179	13738		
12	10 ft.	9720	10558	10839	11070	11301	12296	12943	13502		
	15 "	10071	10909	11190	11421	11652	12647	13294	13853		
	20 "	10322	11160	11441	11672	11903	12898	13545	14104		
	25 "	10573	11411	11692	11923	12154	13149	13796	14355		
	30 "	10824	11662	11943	12174	12405	13400	14047	14606		
	40 "	11075	11913	12194	12425	12656	13651	14298	14857		

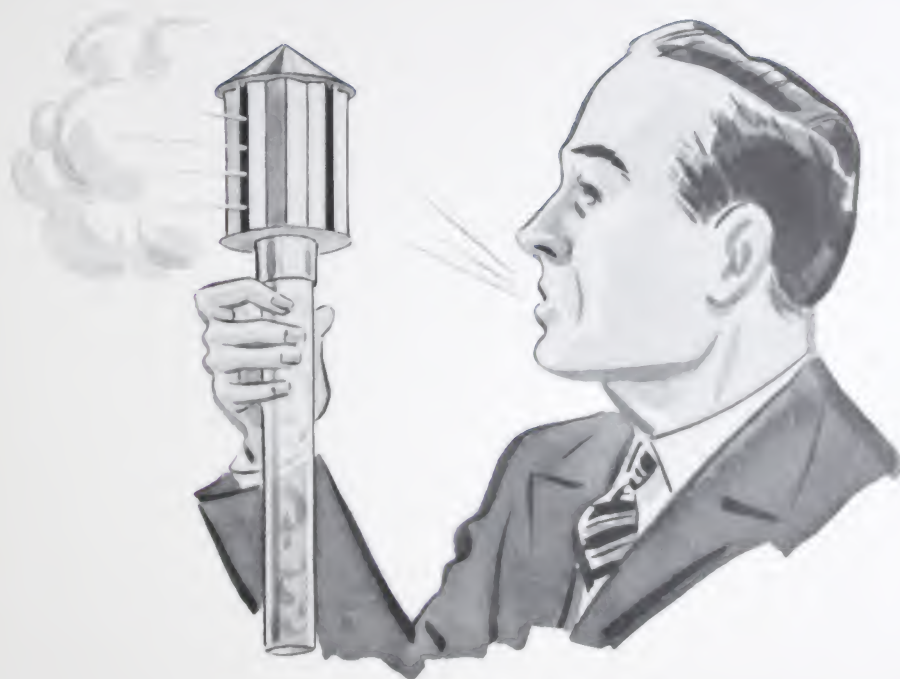
WIND VELOCITIES THROUGHOUT THE UNITED STATES. Here are listed the lowest monthly average wind velocity (LMV), highest monthly average wind velocity (HMV), average yearly wind velocity (AYV), yearly prevailing wind direction (YPD), and the highest recorded wind velocity (HRV), according to U. S. Weather Bureau records.

For most satisfactory results, ventilator capacities should be figured on the basis of lowest monthly average, since in most cases the lowest wind velocities are during the summer when the need is greatest. Proper allowances may be made according to conditions. By referring to pages 18, 19 and 20 the capacities of various size ventilators can be determined according to the wind velocities in each territory.

STATE	CITY	LMV MPH	HMV MPH	AYV MPH	YPD	HRV	STATE	CITY	LMV MPH	HMV MPH	AYV MPH	YPD	HRV
ALABAMA	BIRMINGHAM	4.9	AUG 8.5	MAR 6.7	SOUTH	46	INDIANA	EVANSVILLE	6.4	AUG 10.6	MAR 8.5	SOUTH	60
	MOBILE	8.0	" 11.0	" 9.7	NORTH	87		FT. WAYNE	7.6	" 11.0	" 9.6	S.W.	51
	MONTGOMERY	5.8	" 8.0	FEB 6.8	EAST	41		INDIANAPOLIS	8.5	" 12.1	" 10.5	SOUTH	63
								TERRE HAUTE	7.2	" 11.7	" 9.4	SOUTH	47
ARIZONA	PHOENIX	5.1	DEC 6.4	APR 5.3	WEST	40	IOWA	CHARLES CITY	5.2	AUG 8.7	APR 7.1	N.W.	48
	YUMA	4.7	OCT 6.5	MAR 5.9	NORTH	43		DAVENPORT	7.1	" 10.2	" 8.7	N.W.	56
ARKANSAS	FORT SMITH	5.5	AUG 9.2	MAR 7.2	EAST	57		DES MOINES	6.1	" 9.5	" 7.8	S.W.	50
	LITTLE ROCK	5.7	" 9.4	" 7.4	SOUTH	49		DUBUQUE	5.8	" 8.1	" 7.0	N.W.	47
								KOKUK	5.7	" 9.1	MAR 7.5	S.W.	49
								SIOUX CITY	9.9	" 13.2	APR 11.6	N.W.	65
CALIFORNIA	EUREKA	6.1	OCT 8.3	APR 7.4	NORTH	46	KANSAS	CONCORDIA	6.5	AUG 9.8	APR 7.8	SOUTH	60
	FRESNO	5.3	NOV 8.7	JUNE 6.9	N.W.	41		DODGE CITY	9.9	" 13.2	" 11.0	S.E.	58
	LOS ANGELES	5.7	SEP 6.4	FEB 6.1	S.W.	38		WICHITA	11.1	" 14.0	MAR 12.1	SOUTH	68
	OAKLAND	7.3	NOV 11.8	JULY 9.3	WEST	50							
	RED BLUFF	4.5	AUG 6.7	MAR 5.8	S.E.	49	KENTUCKY	LEXINGTON	8.5	AUG 14.1	MAR 11.5	S.W.	56
	SACRAMENTO	6.1	NOV 8.6	JUNE 7.5	SOUTH	65		LOUISVILLE	6.5	" 10.7	" 8.7	S.W.	58
	SAN DIEGO	6.1	" 7.3	APR 6.7	N.W.	43							
	SAN FRANCISCO	7.3	" 11.8	JULY 9.3	WEST	50							
	SAN JOSE	5.9	OCT 7.4	MAY 6.7	N.W.	38							
COLORADO	DENVER	6.6	AUG 8.4	APR 7.4	SOUTH	53	LOUISIANA	NEW ORLEANS	5.8	AUG 8.8	MAR 8.7	S.E.	66
	GRAND JUNCTION	3.8	JAN 6.8	" 5.5	S.E.	—		SHREVEPORT	5.5	" 8.8	" 7.0	S.E.	50
	PUEBLO	6.0	AUG 8.2	" 6.8	N.W.	64							
CONNECTICUT	HARTFORD	6.2	SEPT 8.7	" 7.5	N.W.	58	MAINE	EASTPORT	7.3	AUG 12.5	JAN 9.9	SOUTH	—
	NEW HAVEN	7.1	AUG 10.1	MAR 8.7	NORTH	49		PORTLAND	7.1	" 9.6	MAR 8.6	N.W.	48
DIST. OF COL.	WASHINGTON	4.8	AUG 8.5	" 6.4	N.W.	55	MARYLAND	BALTIMORE	6.9	AUG 8.6	MAR 7.6	N.W.	54
FLORIDA	APALACHICOLA	6.0	JULY 9.3	OCT 7.8	NORTH	59	MASS.	BOSTON	12.2	AUG 16.5	FEB 14.3	WEST	60
	JACKSONVILLE	8.3	AUG 9.8	MAR 9.1	N.E.	58		MANTUCKET	11.6	" 16.3	MAR 14.6	S.W.	66
	KEY WEST	8.3	" 11.0	NOV 9.9	EAST	84	MICHIGAN	ALPENA	9.3	JUN 12.7	MAR 11.5	N.W.	47
	MIAMI	8.1	JUL 10.7	" 9.3	"	87		DETROIT	9.0	AUG 14.0	" 12.0	S.W.	67
	PENSACOLA	9.2	AUG 11.0	MAR 10.6	N.E.	91		ESCANABA	8.2	" 10.1	NOV 9.3	SOUTH	45
	TAMPA	6.7	" 8.6	" 7.8	N.E.	75		GRAND HAVEN	8.3	AUG 13.4	" 11.3	WEST	60
								GRAND RAPID	7.4	" 9.6	" 9.6	WEST	51
	ATLANTA	8.1	AUG 11.9	FEB 10.2	N.W.	51		HOUGHTON	7.7	" 9.4	" 8.7	"	63
	AUGUSTA	5.4	" 7.1	MAR 6.2	N.W.	49		LANSING	4.0	" 7.8	MAY 6.0	S.W.	45
	MACON	5.7	" 7.8	" 6.7	N.W.	46		LUDINGTON	8.9	JUL 12.6	NOV 10.7	SOUTH	46
	SAVANNAH	7.4	" 10.3	" 8.2	S.W.	68		MARQUETTE	8.4	JUN 11.4	JAN 10.2	N.W.	53
	THOMASVILLE	3.8	" 5.9	" 4.8	S.W.	—		SAULT ST. MARIE	6.8	AUG 9.8	MAR 8.5	N.W.	56
IDAHO	BOISE	5.4	OCT 7.0	APR 6.0	N.W.	43	MINNESOTA	DULUTH	9.8	JUL 12.9	APR 12.0	N.E.	60
	POCATELLO	7.9	AUG 9.2	MAR 8.8	S.E.	46		MINNEAPOLIS	10.0	" 12.3	" 11.2	N.W.	65
ILLINOIS	CAIRO	6.0	AUG 11.1	MAR 8.5	SOUTH	65		MOOREHEAD	8.3	" 10.9	" 9.7	N.W.	58
	CHICAGO	10.0	" 13.0	" 11.0	S.W.	65		ST. PAUL	7.9	AUG 10.7	" 9.4	S.E.	78
	PEORIA	5.7	" 9.4	" 7.7	SOUTH	45	MISSISSIPPI	JACKSON	4.9	AUG 8.1	MAR 6.4	S.E.	49
	SPRINGFIELD	9.4	" 13.2	" 11.6	"	45		MERIDIAN	4.1	" 6.9	" 5.4	S.W.	40
								VICKSBURG	4.9	" 8.1	" 6.4	S.E.	49

STATE	CITY	LMV MPH	HMV MPH	AYV MPH	YPD	HRV	STATE	CITY	LMV MPH	HMV MPH	AYV MPH	YPD	HRV
MISSOURI	COLUMBIA	5.7	AUG 10.2	MAR 8.	SOUTH	50	PENNSYLVANIA	ERIE	9.3	AUG 13.2	JAN 11.4	WEST	55
	HANNIBAL	7.5	" 10.8	" 9.2	S.W.	47		HARRISBURG	5.1	" 8.6	MAR 6.8	WEST	54
	KANSAS CITY	9.	" 14.	" 11.	SOUTH	57		PHILADELPHIA	9.2	" 11.9	" 10.4	N.W.	68
	ST. JOSEPH	7.2	" 10.5	" 8.8	S.E.	51		PITTSBURG	8.6	" 12.	" 10.4	N.W.	56
	ST. LOUIS	8.9	" 12.4	" 10.8	SOUTH	91		READING	5.5	" 8.8	" 6.9	N.W.	70
	SPRINGFIELD	8.3	" 11.9	" 10.2	S.E.	52		SCRANTON	5.5	" 8.2	" 6.9	S.W.	41
MONTANA	HAVRE	7.	AUG 10.	DEC 8.6	S.W.	57	RHODE ISLAND	BLOCK ISLAND	11.9	AUG 18.1	DEC 14.7	S.W.	69
	HELENA	7.2	DEC 8.7	APR 7.9	S.W.	54		PROVIDENCE	9.3	" 13.4	MAR 11.6	N.W.	63
	KALISPELL	5.2	NOV 6.9	" 6.	N.W.	38	S. CAROLINA	CHARLESTON	9.2	AUG 11.6	MAR 10.5	S.W.	81
	MILES CITY	5.3	JAN 7.5	" 5.6	SOUTH	47		COLUMBIA	5.7	" 10.2	" 8.	SOUTH	50
NEBRASKA	LINCOLN	9.	AUG 12.1	APR 10.4	SOUTH	62		GREENVILLE	6.6	" 9.6	" 8.	N.E.	50
	NORTH PLATTE	8.3	" 10.7	" 8.7	WEST	73	S. DAKOTA	HURON	9.	AUG 12.8	APR 10.8	S.E.	56
	OMAHA	7.5	" 10.3	MAR 9.	N.W.	53		RAPID CITY	6.8	" 10.4	" 7.8	WEST	—
	VALENTINE	9.3	JAN 12.8	APR 10.5	N.W.	59		YANKTON	6.2	" 10.4	" 8.2	N.W.	80
NEVADA	RENO	5.8	DEC 8.5	APR 7.	WEST	46	TENNESSEE	CHATTANOOGA	5.2	AUG 8.4	MAR 6.6	S.W.	64
	WINNEMUCCA	6.8	AUG 8.8	" 7.8	S.W.	75		KNOXVILLE	5.6	" 7.9	" 6.6	S.W.	59
NEW HAMPSHIRE	CONCORD	5.2	AUG 7.6	APR 6.4	N.W.	40		MEMPHIS	7.1	" 10.2	" 8.6	S.W.	58
								NASHVILLE	7.2	" 11.9	APR 9.1	N.W.	58
N. JERSEY	ATLANTIC CITY	13.	AUG 16.8	MAR 14.9	N.W.	—	TEXAS	ABILENE	8.2	AUG 11.9	APR 9.9	SOUTH	51
	CAMDEN	9.2	" 11.9	" 10.4	N.W.	68		AMARILLO	10.5	" 14.	" 12.2	"	65
	NEWARK	12.4	" 17.8	" 15.2	N.W.	—		AUSTIN	6.6	SEP 9.4	MAR 7.7	S.E.	44
	SANDY HOOK	11.	JUL 16.	" 14.	N.W.	—		BROWNSVILLE	7.5	" 11.1	" 9.2	S.E.	20
	TRENTON	8.9	AUG 12.4	" 10.6	N.W.	—		CORPUS CRISTI	10.4	DEC 14.1	APR 11.9	S.E.	72
N. MEXICO	ALBUQUERQUE	6.9	JAN 9.6	APR 7.8	WEST	63		DALLAS	8.4	AUG 12.3	" 10.1	S.E.	63
	ROSWELL	5.7	AUG 9.3	MAR 6.9	SOUTH	64		DEL RIO	7.3	DEC 10.1	" 8.9	S.E.	57
	SANTA FE	6.	" 8.4	APR 7.1	S.E.	42		EL PASO	8.	SEP 11.6	MAR 9.3	EAST	60
								FT. WORTH	9.2	AUG 11.6	" 10.2	SOUTH	55
NEW YORK	ALBANY	6.8	AUG 9.2	MAR 8.	SOUTH	59		GALVESTON	9.1	" 11.7	APR 10.6	S.E.	71
	BINGHAMPTON	4.4	" 7.3	" 5.9	N.W.	37		HOUSTON	8.2	" 11.3	MAR 9.8	S.E.	63
	BUFFALO	11.7	" 17.7	JAN 14.6	S.W.	73		PALESTINE	5.7	" 9.2	" 7.2	SOUTH	47
	CANTON	8.2	" 11.4	" 10.1	S.W.	62		PORT ARTHUR	8.	" 10.9	APR 9.5	"	42
	ITHACA	7.6	" 12.	" 9.9	N.W.	70		SAN ANTONIO	6.9	" 9.1	MAR 7.9	S.E.	56
	NEW YORK	12.4	" 17.9	MAR 15.2	N.W.	73	UTAH	SALT LAKE CITY	6.4	DEC 8.7	APR 7.7	S.E.	53
	OSWEGO	8.	" 12.	JAN 10	SOUTH	49							
	ROCHESTER	7.5	" 10.8	FEB 9.2	S.W.	60	VERMONT	BURLINGTON	8.4	JUL 12.8	JAN 10.3	SOUTH	54
	SYRACUSE	8.7	" 13.2	" 11.2	SOUTH	—							
							VIRGINIA	CAPE HENRY	10.1	JUL 13.7	MAR 12.3	S.W.	80
N. CAROLINA	ASHEVILLE	5.4	JUL 10.2	MAR 7.8	N.W.	40		LYNCHBURG	6.1	AUG 9.2	" 7.5	N.W.	49
	CHARLOTTE	4.5	AUG 7.5	" 5.8	S.W.	45		NORFOLK	10.5	" 14.2	" 12.2	SOUTH	63
	GREENSBORO	6.2	" 9.6	" 7.6	S.W.	49		RICHMOND	6.1	" 9.1	" 7.3	S.W.	48
	HATTERAS	10.8	" 15.4	" 12.8	S.W.	80	WASHINGTON	NORTH HEAD	11.5	AUG 18.6	DEC 14.8	N.W.	126
	RALEIGH	5.6	" 8.6	" 7.	S.W.	45		SEATTLE	7.	" 11.9	JAN 9.1	SOUTH	59
	WILMINGTON	6.4	DEC 9.3	" 7.7	S.W.	53		SPOKANE	5.9	OCT 7.4	APR 6.5	S.W.	41
N. DAKOTA	BISMARCK	8.3	DEC 10.9	APR 9.1	N.W.	63		TACOMA	5.4	AUG 7.2	MAR 6.3	S.W.	44
	DEVILS LAKE	9.2	AUG 12.	" 10.6	N.W.	—		TATCOSH ISLAND	9.9	JUL 21.4	DEC 15.	EAST	110
	FARGO	8.3	JUL 10.9	" 9.7	N.W.	58		WALLA WALLA	4.6	OCT 6.4	MAR 5.5	SOUTH	53
	WILLISTON	8.3	AUG 10.5	MAY 8.9	WEST	56		YAKIMA	4.4	NOV 7.6	MAY 5.9	N.W.	34
OHIO	CINCINNATI	5.3	AUG 8.8	MAR 7.1	S.W.	54	W. VIRGINIA	ELKINS	2.6	AUG 5.1	MAR 4.5	WEST	44
	CLEVELAND	10.9	JUL 15.	JAN 13.2	SOUTH	60		PARKERSBURG	5.1	" 8.2	" 6.5	S.E.	—
	COLUMBUS	8.2	AUG 12.4	MAR 10.4	S.W.	60	WISCONSIN	GREEN BAY	8.7	AUG 11.2	APR 10.1	SOUTH	53
	DAYTON	7.	" 12.	" 9.6	S.W.	51		LA CROSSE	6.	" 8.6	" 7.3	"	69
	SANDUSKY	9.7	JUL 13.6	" 11.9	S.W.	56		MADISON	7.6	JUL 11.2	MAR 9.7	N.W.	56
	TOLEDO	9.4	AUG 12.5	" 11.2	S.W.	65		MILWAUKEE	8.7	" 12.2	" 10.9	WEST	49
OKLAHOMA	OKLAHOMA CITY	9.2	AUG 13.9	MAR 11.5	SOUTH	57	WYOMING	CHEYENNE	8.4	AUG 13.8	JAN 11.2	N.W.	63
								LAUDER	3.4	DEC 5.5	APR 4.5	S.W.	74
OREGON	BAKER	6.6	AUG 7.5	APR 6.9	S.E.	40		SHERIDAN	4.5	AUG 7.3	APR 5.4	N.W.	58
	PORTLAND	6.1	OCT 7.5	FEB 7.	N.W.	43		YELLOWSTON PK.	6.8	AUG 8.7	MAR 7.8	SOUTH	—
	ROSEBURG	2.4	" 3.8	APR 3.3	N.W.	40							

ASK FOR THIS DEMONSTRATION OF THE BREIDERT AIR-X-HAUSTER



The revolutionary yet scientific principle of the Breidert Air-X-Hauster is clearly and interestingly shown in this remarkable demonstration. Miniature models are used which accurately reproduce the exact action of the Breidert Air-X-Hauster under actual wind conditions, as compared to the action of ordinary ventilators. This demonstration, performed in your own office, offers conclusive proof of the higher efficiency of the Breidert Air-X-Hauster in providing positive ventilation no matter which way the wind blows and of eliminating back-drafts. Phone or write your nearest Breidert representative.*

Suggestion to Architects. The following paragraph inserted in your specifications will assure you of receiving the finest type of ventilation: "Furnish and install, where shown on plans, Breidert Air-X-Hausters of size and type indicated. Ventilators furnished must be constructed of heavy copper bearing galvanized iron, must have air passages free of obstructing braces or arms, must show an air velocity through the neck in the ratio of at least 1 to 2 compared to the wind velocity over the ventilator head, no matter in which direction the wind blows, and must be absolutely proof against back-drafts."

G. C. BREIDERT CO.

Manufacturers Breidert Air-X-Hausters, 634 South Spring Street, Los Angeles 14, California

*** Representatives Are Located in Principal Cities Throughout the United States**



BREIDERT AIR-X-HAUSTER

AIA File No. 30D1

G. C. BREIDERT CO.

MANUFACTURER

BREIDERT AIR-X-HAUSTERS

634 South Spring St.

Los Angeles 14, Calif